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THE
INSTITUTIONS
OF
MEDICINAL PATHOLOGY

St. MARY'S HOSPITAL
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BY

H. D. GAUBIUS,

Profeſſor of Chemiſtry in the Univerſity of Leyden.

TRANSLATED FROM THE LATIN,

By CHARLES ERSKINE, Surgeon.

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AUTHOR's DEDICATION.

DOCTOR GAUBIUS TO HIS AUDITORS.

THE ſame motives, gentlemen, which induced me to publiſh the firſt edition of this treatiſe, have prevailed upon me to offer you a ſecond, again reviſed, rendered in ſome meaſure more correct, and enlarged with additional improvements. It ought, I confeſs, ſtill to receive ſome further amendments, being ſenſible that it is not defective in one inſtance only. The variety of ſubjects requiring to be treated in a conciſe ſtile, has forced us to obſcurity, and it would have been very eaſy to have inſerted many things which would have added perſpicuity. But who does not readily perceive, that we behove to have regard to the ſize of the volume, which was intended as a manual for common uſe? And the more, ſeeing the author ſtill lives to give an illuſtration.

What may appear to be a greater defect is, that I have altogether omitted many things in this ſyſtem, as if I had not been acquainted with them. This indeed I was aware of; but I do not regret my having paſſed ſome things over in ſilence, upon which Pathologiſts are wont to exerciſe their ingenuity, having regarded ſome as doubtful, although they are generally admitted as truths; and having dropped others as undecided, concerning which ſeeing teachers diſagree, we behoved to give our own ſentiments; and oftentimes, when an explanation of ſome things might have been required, a confeſſion of ignorance, inſtead of ſolid reaſons, would have been extorted from me. Which things, gentlemen, if any of you who are my preſent readers, or others who may be ſo hereafter, have been diſpleaſed with, I am not ſo ſolicitous to remedy, as I have in readineſs a proper excuſe.

But what I have frequently hinted to you, and I think cannot be too often repeated, is, that every thing which is taught in Pathology, *i. e.* the theory of the diſeaſed ſtate, ought to be of ſome uſe in the practice of phyſic, as it is called, by which is attained the manner of diſtinguiſhing and curing diſeaſes. Things, therefore, ought not to be imprudently connected with the art of healing (of itſelf but indeed too extenſive), which have no relation thereto. Neither ought we to be too intent upon this; but what ſhould be much more our endeavour is, that only ſuch theorems be propoſed, concerning the truth of which there is the cleareſt evidence, from faithful obſervation and ſound reaſoning, the only ſure foundation of medicine inſtituted upon rational principles; and therefore all ſuch things ſhould be rejected as are uncertain, doubtful and fallacious, or ſuch as are built upon mere hypotheſes, and cannot ſtand the teſt of ſcience; at leaſt, they ſhould be conſidered in ſuch a light, as not to be eſtimated above the value, or vended above the price. I know indeed that theſe hypotheſes, eſpecially when they are eloquently, and with confidence ſet forth by the teacher, in a method planned with ingenuity, poliſhed with elegance, and ſcientifically handled, as is ſaid, are, with pleaſure, eagerneſs and avidity, graſped at by credulous youth. It is truly excellent to be able to render a reaſon for every thing, and by the acuteneſs of the judgment to ſolve every difficulty, and in a dark and intricate way, where prudence, fearing to wander from the path, or fall headlong, walks timidly, and often makes a ſtop, to bear a torch in her hand. It would be more excellent ſtill, if the ſecrets of nature, which elude our moſt attentive obſervation, and cannot be made out even by the moſt wary reaſoning, could be explicated by conjecture, and as it were by certain divination, like one who ſees in a dream that which is incomprehenſible to him while awake. It would be the moſt excellent thing of all, if a ſyſtem could be compoſed every way poliſhed and complete, in which beginners would find every thing handled with plainneſs and ſimplicity.

Even I would give applauſe, if diſeaſes would yield to the invention of opinion; if a phyſician was to be eſteemed the more perfect, in proportion as he was loquacious; if nature would ſuffer herſelf to be modelled according to their hypotheſes; at leaſt theſe things, I think, ought to be tolerated; if ſpeculation alone conſtituted the phyſician, and that theory had nothing in common with practice, or by its own miſtakes, when left to itſelf, did not pervert the cure of diſeaſes. But it is indeed but too manifeſt how many evils, and thoſe not of the leaſt importance, are derived from this ſource upon the moſt excellent of arts.

When I conſider with myſelf how many unhappy conſequences enſue from obſtinately perſiſting in falſe hypotheſes, and an erroneous way of reaſoning, to which the practice is adapted; how often health is ruined by an improper regimen, diſeaſes protracted by a prepoſterous method of cure, and finally, how many untimely deaths are thus occaſioned; it is not without concern, I muſt ſay, that I am in doubt whether mankind are more benefited or hurt by the medical art. But I ceaſe to ſay any more upon this head, leſt I may furniſh more matter for detraction, of which there is but too much already. I think it likewiſe my duty, on this occaſion, to adviſe you, while you remain at the univerſity, the great emporium, as it were, of doctrines, that you ſhould not be ſo anxious about learning many things, as thoſe which are of the greateſt uſe; leſt, when you return home, you regret, that hindrances, rather than the inſtruments of executing the work, were brought to your hands. For, beſides that it is a very mortifying thing to reap no advantage from what has been the purchaſe of ſo many years induſtry, and, at once, to loſe both your pains and labour, it is even very difficult to learn at maturer years, what ſhould have been learnt in youth,—by which means it happens, that theſe inſignificant theories, with which they were imbued when young, are ſtiffly adhered to, and petulantly defended, when entering upon practice; and being blind to the light of experience, and immoveable by any force of argument, by their noiſe and arrogance, rouſe the indignation of the better informed. Theſe, however, certainly deſerve ſome ſympathy, as well as excuſe. But how ſpeciouſly their unfaithful leaders endeavour to excuſe themſelves of thoſe faults, which ought intirely to be charged to their own account, they themſelves have been ſenſible. I only wiſh the art was not ſuch as ſuffered through the faults of the artificers! For, I do not ſay it with a deſign to draw more contempt upon it, with which it is but too much loaded already; but it is exceedingly detrimental, that that maſculine ſtrength of obſervation, in a manner peculiar to the ancients, from which medicine had its origin, afterwards received improvements, and ought ſtill to be improved by the ſame means, is ſo much the more overlooked, the more the humour of reaſoning, and propenſity to forming hypotheſes, prevail. Becauſe the mind, being fertile in invention, can eaſily want the unneceſſary aſſiſtance of the ſenſes, and therefore neglects to pay a ſtudious attention to nature; or obſerving ſome things in a curſory way, is inſtantly taken up in giving an explanation; at other times, being prejudiced in favour of ſome opinion, it only remarks thoſe things which agree with a certain hypotheſis, or fall in with a particular way of reaſoning, without attending to all the circumſtances as they really occur. Theſe things are an incredible diſadvantage to the whole art; ſeeing it is the principal impediment to our obtaining a perfect hiſtory of diſeaſes, which as the theory of the art rationally deduced requires ſhould be moſt intire, ſo they, who do not heſitate to fill up its blanks with fiction, when they blend falſehood with truth, in ſuch a manner as to conceal defects, and by the deceitful notion of a complete ſyſtem, prevent others from making further attempts, affect the very foundation with a twofold misfortune.

Neither is this an end of our evils. Some have more ſagacity, who, whenever they have betaken themſelves from ſpeculation to practice, ſooner or later perceive the fallacy of theſe doctrines in which they have been initiated, and therefore reject them intirely; not however with that prudence and moderation which is becoming. You doubtleſs obſerve ſome, who, when they have detected the falſehood and frivolouſneſs of ſome theories, immediately cry out, That no faith is to be put in theory; that all theories are falſe and uſeleſs, not to be truſted; that the art will not admit of reaſoning, which is more hurtful than ſalutary; and finally, that we muſt reſt ſatisfied with empyriciſm, which points out a ſafer way.

But theſe either diſſemble, or are really ignorant, that, amongſt the numberleſs theories, there is ſcarce one altogether falſe, and in which there is not ſome truth, but is principally faulty in being mixed with falſehood; and that which is competent in ſome diſeaſes, is improperly applied to all the reſt. Notwithſtanding this, they violently reject the wheat with the chaff, from which it ſhould have been ſeparated; and, when they ought to conſider how many advantages have accrued to medicine from the firſt inſtitution of the art, upon rational principles, continued down to our time, by the ſucceſſive labours of ſo many eminent men, and to be ſenſible of the benefits thence ariſing, ſo as to prove an incitement to others, they refuſe to partake of the good fruit that has been offered them, and, becauſe it was mixed with tares, content themſelves with returning to the acorns. How much wiſer was the judgment of Cornelius Celſus, which he gave upon a diſſenſion between the dogmatic and empiric ſectaries! Neither is it truly to be believed, ſays he, that the moſt excellent of the profeſſors of the ancient empiriciſm, if they could return to life again, would think differently. So much more imprudent, therefore, would the counſel of ſuch of the moderns ſeem, who contend, that theory, as it now ſtands, having received ſo many improvements, and ſo well ſupported, ſhould be changed for empiriciſm. If they are, in reality, diſpoſed to imitate the raſh herd of vulgar empirics, I mean quacks, can any thing be more infamous? But if they intend that we ſhould follow an empiriciſm; wherein reaſon is joined with experience, which by the help of every kind of doctrine that can throw light upon the ſubject, drawn from the moſt accurate facts and obſervations, can produce whatever may be uſeful to the phyſician, what can be more abſurd, than, by changing the name only to propoſe the ſame diſcipline, by which is underſtood *theory*, in the ſtricteſt ſenſe of the word.

But it would be tedious, and foreign to my deſign, to dwell longer upon this ſubject. I have only touched it with an intention, in the *firſt* place, that you ſhould be ſenſible, that theſe uſeleſs theories, the offspring of invention, have no real exiſtence, unleſs in imagination; although, by their plauſibility they may impoſe upon the unwary, and are not only deſtitute of any uſe whatever, but in a great meaſure, obſtruct both the art and artificer: in the *next* place, after having, at the firſt, preſented you with a defective ſyſtem, I have now offered you another, not much more complete. Indeed, I will candidly confeſs, that the longer I am converſant in the art, I unlearn more than I learn, and as I advance in years, my knowledge ſeems rather to diminiſh than increaſe, and it is only wanting, that when I think of improvements, I even believe, if ever I ſhould return to the ſame taſk again, that ſome things would be expunged. Adieu!

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INTRODUCTION

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INTRODUCTION

TO THE

PATHOLOGY.

Of Medical Diſcipline.

1. LIFE, health, diſeaſe, and death are the univerſally eſtabliſhed limits fixed by human nature to the medical courſe.

2. The former two conditions (1.) are ſaid to be according to nature, ſeeing it is agreeable to enjoy the ſame; the other two, as being oppoſed to the former, and to which we are averſe, are ſaid to be againſt, or contrary to nature.

3. Both kind of ſtates, however, (2.) in the more extenſive ſignification of the word *Nature*, are natural, and manifeſt their own phyſical limited cauſes, from which they have a beginning, come to perfection, continue for a time, and, in like manner, decay and have an end, varying according to the different natures of each, and are even repugnant to each other, as well thoſe inherent in the body as thoſe caſually induced.

4. The human mind, likewiſe, by the force of that connection which it hath with the body, operates by a voluntary conſent and ſecret inſtinct

which aſſiſts in the preſervation of life and health, or, by diſeaſe or death being brought on, tends to aboliſh the ſame.

5. There is likewiſe in the body, according to the mixture, texture, form, compoſition, and animation, of the different parts of which it is compoſed, an inertneſs, mobility, alſo a mutability, excitement, and ſympathy, from which different cauſes, as well ſalutary as noxious, are conſtantly produced.

6. Beſides, man is connected with a variety of things, each endowed with its own power of acting, and at different times greatly varying; ſome of which it is impoſſible he can be exempt from; others he cannot at all times, and at diſcretion, accommodate himſelf to, or evite. Theſe, whether they act externally or internally, according to their ſubſtance, quality, or as they concur with, or ſucceed others, affect the body differently, and, by the body, the mind; alſo determine the inherent powers of human nature (4, 5.) in a different manner; excite, oppreſs, or change them into a natural or diſeaſed ſtate, and, in like manner, are ſubject to their own changes from theſe inherent powers. From this ſource are derived very many cauſes of a good or bad ſtate of health, ſuch as aliments, poiſons, and remedies.

7. If this threefold genus of powers (4, 5, 6.) has, by a conſentaneous law, agreeable to human nature, amicably conſpired, man enjoys a flouriſhing longevity; if not, he is afflicted with diſeaſe, or carried off by a premature death.

8. This is the ſubject which the phyſician treats; it being propoſed, that he, by a ſkilfull direction of the powers of human nature, (7.) ſhould preſerve, as long as poſſible, the life and health of the body committed to his care.

9. Medicine, therefore, as it is now cultivated, is the knowledge of, and proper direction of the powers of human nature, for the preſervation of life and health from diſeaſe and death.

10. Formerly it (9.) only promiſed health to the ſick; but its bounds being afterwards more enlarged, it was alſo found of advantage to the ſound, which laid a twofold duty upon the phyſician; the one of preſerving health, the other of curing diſeaſe.

11. It ought, therefore, to explain, 1*ſt*, The nature, cauſes, ſeats, different modes, degrees, and effects of thoſe conditions of the body for which it is engaged either to preſerve or remove (1, 9.) 2*d*, Alſo the preſervative, deſtructive, and curative powers of human nature, conſtitutional in every one from the beginning (4, 5.) 3*d*, The ſalutary, noxious, and reſtorative powers of things given or applied, (6.) 4*th*, Rules and obſervations for the proper direction of the former (2*d*,) and the right uſe of the latter (3*d*,) that the end of the phyſician may be obtained.

12. But ſeeing the general doctrine of all theſe (11.) is inſufficient, and muſt be adapted to every ſingle perſon according to the difference of age, ſex, temperament, and manner of life, it will be readily manifeſt how extenſive medical diſcipline is.

13. As the variety of ſubjects to be treated required a regular method, that ſeemed the moſt proper which is taken from the diverſity of conditions (2.) and the twofold office (10.) of the phyſician, and, in the firſt part, relates whatever ſhould be known with regard to the body, or how it ought to be treated in health; afterwards ſubjoins whatever concerns the treatment of the ſick, all digeſted in due order.

14. The whole of the inſtitutions of medicine is therefore divided into two parts; the firſt of which delivers the doctrine of thoſe things that are according to nature in the body; the laſt treats of thoſe which are againſt, or contrary to nature (2.); the former is called HYGIENE, the latter IATRIKE, from their different views.

15. HYGIENE, in a general ſenſe, includes the whole office of the phyſician with regard to the ſound ſtate, and explains

I. The human œconomy, and the nature of life and health; alſo the cauſes and effects of it: by this part, *Phyſiology*, we underſtand a treatiſe on human nature.

II. The doctrine of the ſigns, by the aſſiſtance of which, life and health in general, and the various ſtates and degrees of theſe in every particular perſon, are known, and is called *Semiotic Phyſiology*.

III. The rules to be obſerved, and the means to be uſed for preſerving life and health, as long as poſſible, which is called *Diatetic Phyſiology*.

16. IATRIKE, likewiſe divided into three parts, in like order treats its proper ſubjects (14.) by explaining

I. Whatever ought to be known with regard to the nature, cauſes, and ſeats of diſeaſes, and is called *Pathology*.

II. The doctrine of the ſigns, by which, whatever in itſelf is obſcure in diſeaſes, ought to be known, and by which, whatever is paſt, preſent, or to happen is detected; whence it is denominated *Semiotic Pathology*.

III. The means by which a bad ſtate of health is benefited, and the proper method of uſing the ſame. This is called *Therapeutics*.

17. Each of theſe have a neceſſary relation, and an inſeparable connection; the firſt, however, in order, is HYGIENE. As a curve line is the reverſe of a ſtraight, ſo is health of diſeaſe; and whoever knows how to preſerve health is in a great meaſure prepared for treating the ſick.

18. But the foundation of all medicine is ſituated in the nature of the body itſelf. For ſhe alone, without the aid of a phyſician, for the moſt part, preſerves health, and cures diſeaſes. She denying her aſſiſtance, or proving refractory, the inſtruments of the art are of no uſe. From a curious obſervation and imitation of nature the art derived its origin, by the ſame means received improvements, and finally will continue to improve. Phyſicians are the miniſters of nature.

19. Therefore all medical doctrine, from which we may expect advantage, ought to conform to this rule; that is, that it ſhould be as carefully as poſſible narrated from the moſt accurate obſervation what nature can effect, or in what manner ſhe is affected: nor is it enough that we have explained to us her powers and operations as they occur in health, that is in phyſiology (15. I.). Nature ſtruggling with diſeaſes, which Pathology (16. I.) treats of, exhibits more fully her faculties and affections.

20. Whence does it come that which ought to be allowed for truth in medicine? Human nature, finiſhed by the ſtated laws of the Creator, increaſing itſelf by the like indiviſible atoms, under the ſame conditions, always in the ſame manner acts, and is acted upon. Whatever, therefore, concerning its œconomy, either ſound or diſeaſed, falls under the evidence of the ſenſes, ought to be regarded as a firm and eſtabliſhed truth; nor is there any thing

more certain in phyſics. Competent to this, is what has been confirmed by obſervation, concerning the effects of things acting upon the body externally, (6.). Laſtly, Whatever things have been obſerved, and applied to the principles of demonſtration, are legally deduced by the help of ſound reaſoning, although they are not evident to the ſenſes, do not however deſerve the leſs credit.

21. With no juſtice, therefore, can thoſe falſe, doubtful, erroneous, and uncertain things, which too ſcrupulouſly inquiring doctors, by falſe obſervation, and an unjuſt manner of reaſoning, have introduced, be imputed to the art, as if it were merely conjectural. There is not one ſcience which reſts upon a ſurer foundation.

22. It is not, however, to be pretended, that medicine is not encumbered with its own doubts, obſcurities, and conjectures, never wholly to be cleared up: nor is it the gift of mortals thoroughly to comprehend either their own nature, or the nature of thoſe things with which they are connected. But is not this weakneſs of human underſtanding common to all? The medical art is indeed difficult, on account of the variety and extent of the ſubjects it is engaged to treat, (11, 12.)

23. Beſides, this private objection lies againſt any poſitive concluſion—the great difference in the conſtitution of one man from another. It is not ſufficient that the phyſician view things in general, but alſo what is peculiar to every individual, that he may advantage the health of each, (12). Here ſuch a variety occurs, as cannot be completely enumerated from any ſtrength of obſervation.

24. Finally, it is not allowed him to remain in contemplation, or to ſuſpend his judgment in diffi-

cult caſes till more light appear. The nature of his office (9, 10.) obliges him to take immediate meaſures, and this often compells him to conclude haſtily, and to ſolve by conjecture what could not be done ſoon enough by the rules of ſcience.

25. In this reſpect, therefore, (22. to 25.) we do not deny that medicine may be called conjectural, ſeeing it cannot always attain to certainty, and muſt ſometimes be directed by probability; everywhere, however, uſing ſuch caution as may ſave it from the imputation of raſh and hazardous experiment.

26. Detractors hear theſe things, and having learnt ſuch ſciences as are free from theſe defects, which they call applicative, they affect to make a diſtinction between the ſpeculative and the practical; of which circumſtance taking advantage, they decry medicine before all others.

27. Theſe things being prefaced, according to the nature of the inſtitute, I ſhall next attempt to draw the firſt lines of *Pathology* (16. I.), having firſt premiſed a few things concerning the ſound ſtate of the body, HYGIENE, which are uſually delivered to learners.

PATHOLOGY.

PATHOLOGY.

28. THE duty of the phyſician towards the ſick is to cure the diſeaſe.

29. The cure of a diſeaſe is to change it into health.

30. Pathology, therefore, teaches the knowledge of the diſeaſed ſtate, with this intention, that it may lead to the method of cure (16. I.), and ought to explain what difference there is between the ſick and the ſound ſtate, and how much diſeaſe differs from health.

31. Diſeaſe, therefore, is to be conſidered as directly oppoſite to health, participating of a different nature, ariſing from its own cauſes, and in time producing its own effects.

32. But it muſt likewiſe be explained how much one diſeaſe differs from another; for, from health placed as the mein, the deviations from that may be very various.

33. Hence it is evident, that we muſt treat of the nature, differences, cauſes of diſeaſes, &c. firſt in general, afterwards in particular, and always comparatively to the conditions of health, a competent knowledge of which is previouſly required.

GENERAL PATHOLOGY.

Of the Nature of a Diſeaſe.

34. That ſtate of the living human body, in which it happens that the functions proper to man

cannot be exercifed according to the laws of health, is called a diſeaſe.

35. Under the word *ſtate* we comprehend, in general, the defects, exceſſes, and whatever changes happen in theſe things which are requiſite in the body, or the different parts of it, for the due exerciſe of the functions; for the right underſtanding of theſe, therefore, as is proper (27.), no exception can be taken againſt the general term, as having any thing obſcure or ambiguous; nor can any one offer objections, unleſs they have a mind to turn things ſerious into ridicule.

36. Medicine does not treat any other diſeaſes incident to man, beſides thoſe ariſing from the vitiations of the body, which being corrected, the diſeaſe is taken away: they may, however, on account of the mutual connection of the mind and body, have their origin in the former, and the operations of it may obſtruct its own cure. Theſe are the limits of the regulation of the mind which belong to phyſicians.

37. Mention is made of life in this definition, not only for this reaſon, that diſeaſe is an affection of life, nor that it could be conceived without it more than health; but that it may be underſtood that there is an active principle in the ſick, diſtinct from the diſeaſe itſelf, to obſerve and direct the motions of which ought to be the principal care of the phyſician having a ſhare in the work, (18.). For, from the *vis vitæ* ſtill exiſting in the ſick perſon, it happens that the application of things ſalutary, as well as unſalutary, affect it, and cauſe it to act in a very different manner (6.).

38. Seeing then by diſeaſe is meant an affection of the body different from the ſound ſtate, (35.);

when it is preſent, the effects of health ariſing from their own cauſe, *i. e.* the functions, muſt neceſſarily be eſtranged: there is, therefore, in every ſick perſon, ſome leſion of functions more or leſs, various in degree, number, extenſion, and duration. If, at ſome period or other, the diſorders of the body have not induced theſe, they are rather reckoned deformities than diſeaſes; although they are not to be entirely removed from the attention of the phyſician.

39. In this place we would be underſtood to mean all the functions that relate to man, not even theſe excepted which ſeem to be peculiar to the mind, as they are much affected by a morbid ſtate of the body.

40. The imperfection of functions which regard age, ſex, and temperament, are not here included, as they are comprehended in the latitude of health; neither are the impotences which habit may have contracted, nor thoſe which flow from the neceſſities of human nature, if they do not exceed meaſure.

41. As therefore the functions are entire in health, ſo they are imperfect in diſeaſe; but it will not be fit that the phyſician, proceeding upon rational principles, call every thing a real diſeaſe which is irregular in the functions, leſt, by confounding the notions of cauſe with effect, a perfect cure may be neglected.

42. From what has been ſaid (34, 35.) it is evident, that the nature of a diſeaſe in general conſiſts in thoſe attributes of the living body being badly affected, by which it is fitted to bear its own ſhare in the human functions, and all and every diſeaſe agrees in this, that they have their ſeat in the body. They are not, therefore, to be reckoned within the province of the phyſician, which ſolely pertain to the mind, unleſs we are inclined to go beyond the ſtated bounds of medicine.

43. Hence the medical knowledge of a diſeaſe explains the nature of thoſe things which, in the human body, deviate from the ſound ſtate, by which the functions are impeded; nor does the cure conſiſt in any other thing than the reſtoration of theſe, which if effected, the phyſician may expect that the functions will recover their priſtine vigour, nor can the art afford any other aſſiſtance, if he hath fallen from this hope.

44. As it therefore propoſes to explain the nature of particular diſeaſes, as they occur among mankind, it ought accurately to point out that which is changed by a certain cauſe in the body of the ſick perſon, and is the reaſon why he cannot go through his ordinary functions. That indeed for the moſt part lies hid from the ſenſes, and cannot be known by itſelf. Whence, that it may be detected, there is need of a ſtrict ſcrutiny and accurate reaſoning, as an error committed in this reſpect may be productive of the worſt conſequences: the moſt prudent in this caſe are often at a ſtand, and rather chuſe to reſtrain their courſe than walk in darkneſs.

45. For this inveſtigation (44.), the phænomena, which in the ſick manifeſt themſelves to the ſenſes, are the principal grounds; the chief of which is the leſion of functions; theſe being rightly obſerved, when they ariſe from the diſeaſe, the nature of it (38.), or of its cauſe, may be concluded from ſound reaſoning.

46. The fulleſt light will be derived from an exact knowledge of the natural ſtate and condition of every particular function, likewiſe of the manner in which it is exerciſed, alſo of the properties and powers with which the body, being provided in its proper parts, concurs in performing theſe. So that

by comparing the ſound ſtate of the function, and its requiſites, with the ſame when diſeaſed, it will be readily known what, and how great the deviation is from health.

47. Hence will appear the great uſe of Phyſiology (15. I.), and that none can be without it who would rightly underſtand the nature of diſeaſes. But ſuch things, in the expoſition of the human œconomy, as remain obſcure, intricate, and doubtful, or ſuch as are erroneous, conjectural, and fictitious, when raſhly admitted, greatly redound to the prejudice of Pathology. So that every good phyſician will chuſe to himſelf that part of medical doctrine which is leaſt liable to theſe objections.

48. Nor is the knowledge of thoſe powers of leſs importance in that inveſtigation, by which whatever is inherent in the conſtitution, ingeſted, or in ſome other way communicated, affect the body, and induce a change upon it. Theſe carry alongſt with them the occaſional cauſes of diſeaſes (6.); which being properly underſtood, it will be eaſy to form a judgment of the effects by them produced. For the attaining this end, beſides the obſervations which medicine takes more immediately from its own proper ſtore, the things that are demonſtrated in mechanics, phyſics, and chemiſtry greatly contribute, although the great variety of idioſyncracies, and a vaſt number of poſſible combinations, induce us to wiſh, rather than hope, to arrive at perfection in that doctrine.

49. It is chiefly neceſſary to have before us complete hiſtories of all and every diſeaſe, compiled from the full and accurate obſervations of practitioners, as upon theſe reſts the whole knowledge of diſeaſes (45.); ſo, when they are compared with thoſe,

which, upon a careful examination, are obſerved in the ſick perſon, the nature of the diſeaſe, under which he labours, will be clearly underſtood. Nor is there any greater or more certain aſſiſtance given, by which obſcurities may be cleared up, doubts ſolved, falſehood detected, and controverſies decided; or if, at any time, the principles of ſcience (47, 48.) have not afforded ſufficient light. In this ſpacious road did phyſicians formerly walk, and do ſtill proceed, regreting, in the mean time, that it is broken in many places, and deep with the mire of many trifling narrations.

50. From which circumſtances (45. to 50.) duly conſidered, it is eaſy to ſee with how great, and how many difficulties our inquiries are embarraſſed; whoever likewiſe conſiders the multiplicity of complicated caſes, and anomolous diſeaſes happening in the ſame perſon, will not be ſurpriſed, that here ſometimes the moſt diſcerning are at a ſtand. The longer and the more diligently any one labours in the art, the more cautious will he be in concluding with regard to the nature of diſeaſes.

51. Is diſeaſe, therefore, properly called a conflict of nature fighting for her own ſafety? This notion, taken from the inmoſt receſſes of medicine, is approved by every great maſter in the art. For there is really in nature a very vigilant principle, ſtudiouſly careful to preſerve the health of the body, to procure ſuch things as are ſalutary, and to repel whatever is noxious. From thence ariſe theſe ſpontaneous efforts, which are obſerved in the ſick, and neither to be aſcribed to the cauſe of the diſeaſe, nor to the remedies uſed, which ſo evidently tend to health, that leave being given, nothing could be more fitly deviſed, or more happily conducted. Nature, therefore,

fore, may be very properly called the curer of diſeaſes, and phyſicians the miniſters of nature. In fine, the ſum of the whole art is reduced to a careful obſervation, imitation, and direction of nature (9, 18, 19.). Wherefore let this grand maxim be always revolved in the mind of phyſicians. But it will not be allowable to obtrude this for the general definition of a diſeaſe, neither will it apply in all and every particular diſeaſe; nor ought we to confound the diſeaſe with the remedy. A conflict of nature includes the idea of ſomething reſiſting her: this is a diſeaſe: that to which nature oppoſes her own curative efforts, to which, if you give the name of a diſeaſe, will you ſay that diſeaſe is abſent when languiſhing nature does not reſiſt? or will you, in like manner, refer to the diſeaſe itſelf, what ſimilar motions the phyſician, imitating nature, produces by his remedies? We grant that there are diſeaſes given however, which if you view in their whole courſe, a good part of which theſe efforts conſtitute; that there are likewiſe others, upon which, when they ſupervene, they change it into a different type: finally, they accompany many others under the form of ſymptoms, which ought to be carefully diſtinguiſhed from the proper effects of the diſeaſe, ſo that with no propriety whatever can they be aſcribed to the nature of the diſeaſe itſelf.

52. The ſame thing (51.) I would have regarded by thoſe who are inclined to ſubſtitute in the place of nature, the ſoul, Archeus, or any other principle active in diſeaſes. As they differ in words only, and not in things themſelves, and no more light is obtained from the one than the other, there is no reaſon for abrogating the term uſed by the ancients.

Of the Cauſe of a Diſeaſe.

53. Seeing a diſeaſe ſuppoſes ſome change in the body different from the ſound ſtate (34, 35.), which can be preſent or abſent, the corporeal effect will belong to that limited power by the force of which it exiſts.

54. But that, whatſoever it is, by which it happens that diſeaſe exiſts, is called the cauſe of the diſeaſe.

55. The diſagreeable ſenſation ariſing from the leſion of functions, has prompted ſick mortals at all times to the inveſtigation of this (54.); ſo that from thence medicine would ſeem to have taken its riſe. The nature of the office, therefore, makes it incumbent on the phyſician, who truly may be ſaid to have underſtood the diſeaſe when he has detected its cauſe. Nor is a perfect cure to be expected till that is removed.

56. To this (55.), however, proper limits ought to be ſet; nor ought it to be inſiſted on further than is uſeful, or with more ſubtilty than truth. We are not, therefore, to puſh our inquiries to the furtheſt metaphyſical cauſes, or even to the more remote phyſical cauſes; the art in itſelf, but indeed too extenſive, hath however its own bounds, and even forbids a further inveſtigation of the ſecond cauſes than is conducive to the cure.

57. Wherefore we are not to dwell upon theſe minute differences of cauſes, which the ſchools have introduced. This matter for controverſy is now rejected by all the ſounder philoſophers, as diſgracing an art which is more to be learned from obſervation than words.

58. Phyſicians make a diſtinction, not unuſefully, between external and internal cauſes; it is ſaid to proceed from an internal cauſe, when ſome latent vitiation has for ſome time exiſted in the body before it breaks out into a diſeaſe: Whatever things inſinuated into the body, received by ingeſtion, or applied externally, acting by their own force, produce diſeaſe, that is ſaid to ariſe from an external cauſe. The former, therefore, alledges ſome defect of health latent in the body, or ſo ſmall as to be borne for a time without any remarkable leſion of functions; and this can have its ſeat either in the ſolid or fluid parts; the latter may affect the ſoundeſt with diſeaſe, which, for the moſt part, manifeſts itſelf to the ſenſes, and ſo ſuddenly produces its noxious effects, that it is often perceived by the ſick themſelves. Whence it likewiſe means the evident, nor was it intirely overlooked by the ancient empyrics, who contended that the queſtion of internal cauſes, as being obſcure, uncertain, and only to be known by conjecture, was to be held as ſuperfluous.

59. The moſt notable of the cauſes are the προηγουμενη, or prediſponent, and the procatartick, προφασις, or occaſional; that diſpoſition inherent in the body, which, with the concurrence of the occaſional cauſe, readily produces diſeaſe, is called the prediſponent. The occaſional is whatever ſupervening upon the prediſponent excites it, ſo as jointly to generate diſeaſe: Neither of them, therefore, are ſufficient to produce it of themſelves ſingly, but it is neceſſary that both of them concur. If prediſpoſition is abſent, the occaſional cauſe will not hurt; and, on the other hand, if the occaſional can be prevented from concurring with prediſpoſition,

the diſeaſe will conſequently be prevented. Obſervation has taught this diſtinction, as it evidently appears, that all men are not equally affected with the ſame things, and that valetudinarians, by a proper regimen, may be preſerved ſound.

60. The principal and moſt general diviſion of cauſes is into remote and proximate. In their notions of either, authors by no means poſitively agree: It is called the remote by ſome, which is of itſelf not ſufficient, but requires the intervention of ſome one more immediate to produce diſeaſe. The proximate, therefore, according to them, is that which ſupervening the remote cauſe renders it effectual for producing the diſeaſe, and happens immediately antecedent; ſo that this diviſion of cauſes ſcarcely differs from the former (59.); the proximate is confounded with the occaſional (59.) in the vulgar way, as they make it the one immediately preceding the diſeaſe; but the remote increaſing by itſelf, that it may at length arrive at diſeaſe, becomes the ſame with the proximate. Others more properly call thoſe the remote which ſingly contribute ſomething to generate the diſeaſe; not however, unleſs united, do they produce the whole of it; whatſoever place they may hold in the ſeries of cauſes concurring to have that effect. Hence, the proximate cauſe is that which is produced from the concurrence of all the remote cauſes, alone conſtitutes the whole diſeaſe, and is inſeparable from it; it is for this reaſon it is called continent, as it contains the whole ſum of the origin of the diſeaſe, which conſtantly manifeſts itſelf when it is preſent, and it being taken away, the diſeaſe is likewiſe taken away. The remote is only a part of this, whatever part it be, ſo only produces a part of

the diſeaſe. Whoever knows all and every one of the remote cauſes, as they conſpire together, has a proper idea of the proximate; and he who takes away all of them deſtroys the proximate, and with it the diſeaſe; who only removes ſome, others being left, aboliſhes but a part of the proximate, and does not completely cure.

61. Omitting other differences of cauſes of leſs importance, from what has been ſaid (56, 61.) it will be evident, that what I call the proximate or continent cauſe in its proper ſenſe, hath in it the nature of the true phyſical cauſe, which ſo affects the diſeaſe, that it being preſent the diſeaſe alſo is preſent, which continues with it, is changed when it is changed, and in like manner is removed when it is removed. The ſame thing cannot be aſcribed to the reſt, and, therefore, they do not come up to the name of a cauſe. Phyſicians, therefore, in their own way of ſpeaking, include all that under the title of the cauſe which in any way concur to generate the diſeaſe, whether as a true cauſe, or as a part of it, or a certain condition without which it could not exiſt, &c. Hence, matter is produced for cavilling, ridicule, and controverſy, as if a cauſe could be without an effect, or an effect without a cauſe, or as if the ſame effect could be produced from different cauſes.

62. So it would ſeem proper to call that the cauſe of the diſeaſe only, which by its own power alone conſtitutes the whole diſeaſe. Concerning this we are at liberty to judge, whatever we may do with regard to the phyſical cauſes.

63. Hence, as every diſeaſe whatever has its own definite cauſe (54.), ſo theſe will be different in their nature in different diſeaſes; and on the other hand

will be the ſame in ſuch diſeaſes as agree in their nature, although they may occupy different parts of the body, and do not diſorder preciſely the ſame functions: Which compendium is of great uſe in the art.

64. Nor ought a mere privation to be referred to that cauſe, as if a diſeaſe, or a defect of health, could only ariſe from the abſence of ſuch conditions as are requiſite for preſerving it; very often there are things different from this, which may by their irritation or obſtruction occaſion diſeaſe.

65. But ſeeing a diſeaſe hath its ſeat nowhere but in the body (36.), the cauſe of it muſt likewiſe belong to the body, although perhaps it may have its origin in the mind, by the force of that mutual connection which ſubſiſts betwixt them; to obſerve which is the buſineſs of the phyſician, and of philoſophers to explain.

66. It is therefore ſo much connected with the diſeaſe as to be inſeparable from it; and when it is removed, the other is ſo in courſe, nor can it be preſent when the diſeaſe is abſent. The diſtinction of cauſes, therefore, into continent and incontinent, is no diſtinction at all. The diſeaſe does not remain longer than its cauſe, *i. e.* without a cauſe.

67. Finally, the cauſe conſtitutes the nature of the diſeaſe and its effects, and therefore in fact ſcarcely differs from the diſeaſe itſelf; whatever is in it ought to be found in its cauſe. Wherefore the inveſtigation of that is eſteemed the moſt uſeful and neceſſary (43.). That is the moſt perfect knowledge of diſeaſes which ſhews in what manner every ſingle diſeaſe conſiſts in its own definite cauſes.

68. It is ſeldom, however, that it is ſimple, but is compounded of ſeveral conditions concurring: So that the idea we have of the diſeaſes, as well as the health of the human body, comprehends a number collected into one: In as many different parts, therefore, as that which we call diſeaſe conſiſts, ſo many diſtinct conditions, or active powers, will be in the cauſe of it, every one of which make ſome part of the diſeaſe, united the whole.

69. As often, therefore, as any one of thoſe conditions, as by their mutual concurrence conſtitute the cauſe of the diſeaſe (68.), is wanting, is changed, increaſed in degree, or when it happens that new ones accede to the former, or if there are ſome ſubſtituted in the place of others, as often will there be an analogous diminution, change, or increaſe in the diſeaſe itſelf; ſo that there takes place a total abolition of it, when all and every one of them are removed.

70. Which poſition being fixed (69.), a reaſon can be aſſigned for the ſlowneſs or ſuddenneſs of diſeaſes, in their riſe, duration, increaſe, decreaſe, paroxyſms, remiſſions, periods, mutations into others, relapſes, and neutral ſtates fluctuating between health and diſeaſe.

71. Wherefore, that the cauſe of the diſeaſe may be rightly underſtood, it behoves us to reſolve it into the ſimple parts of which it is compounded, firſt to examine each of theſe ſingly, afterwards conjoined, what they can effect ſeparately, and what together. This is a matter of great difficulty, but exceedingly neceſſary for a phyſician proceeding upon rational principles.

72. But this is accompliſhed by a diligent inveſtigation of thoſe things which have preceded the

diſeaſe, as it is poſſible they may have contributed ſomething towards generating it, whether theſe have been formerly latent in the body, or whether they have but lately acceded (4. 5. 6.); becauſe the powers (71.) are contained in theſe, by the concurrence of which the diſeaſe is produced; when rightly underſtood, will therefore point out the ſource from which it flows.

73. And theſe are the things (72.) which with phyſicians come under the name of remote, (60.) prediſponent, and procatartick (59.) cauſes. How uſeful an inquiry into theſe is, will evidently appear. But if the ſchool of the ancient empyrics were brought with difficulty to acquieſce in theſe only, the moderns are more to be blamed, who, overlooking the remote cauſes, have entirely confined themſelves to the inveſtigation of the proximate (60.), which, however, is often inacceſſible, unleſs the remote cauſes have appeared in a pretty conſpicuous light.

74. Although, therefore, they have not the nature of true cauſes, and are improperly confounded with theſe (61.), notwithſtanding deſerve to be thoroughly conſidered by pathologiſts, and can be called the original principles of diſeaſes: They may alſo be referred to two heads, one of which comprehends the ſeeds of diſeaſes, the other the noxious powers.

75. By the ſeeds of diſeaſes, I mean whatever diſpoſitions inherent in the body favour their generation, if any analogous power concurs to produce the ſame effect: they are commonly called πϱοηγȣμενα, or prediſponent.

76. The noxious powers are ſuch things as are endowed with the peculiar faculty of producing diſ-

caſes

eaſes in that body previouſly fitted by the ſeeds, *i. e.* prediſpoſition. Theſe are called procatartick or occaſional.

77. It is requiſite that both concur, that the cauſe of the diſeaſe may be produced. For neither is any power effectual of itſelf, unleſs it falls upon a body fitted to receive the impreſſion, nor will the ſeminal diatheſis break out into diſeaſe, unleſs it is excited by ſome power having that effect.

78. A mutual affinity of both kind of conditions is required, that they may jointly conſpire to produce the ſame effect, and that the one be not oppoſite to the other. For not every kind of noxious power is fit to affect every prediſpoſition: neither is there an univerſal prediſpoſition for every kind of diſeaſe; ſo that the moſt entire health does not, with equal force, reſiſt all and every unſalutary thing. Hence the ſame diatheſis favours ſome, and oppoſes others, according to the different nature of the noxious power.

79. It is therefore plain, that a ſuperficial knowledge of theſe original principles is not ſufficient; but it is requiſite to know the nature of every latent ſeed, as well as noxious power, likewiſe their ſympathy and antipathy, what reciprocally they can affect, and in what manner they are affected.

80. So, finally, by the ſynthetic method we come to the knowledge of the cauſe of the diſeaſe which theſe things jointly conſtitute; alſo by the ſame means, *a priori*, as they ſay, the nature of the diſeaſe (67.) is known; as, upon circumſtances being taken collectively, the ſame is attained by the analytic method, or an error committed in either way of argumentation can be diſcovered and corrected.

Of the Symptoms.

81. A ſymptom, as it expreſſes in words what happens to the ſick perſon, but the whole diſeaſe, together with its cauſe and effects, can be referred among accidental circumſtances, hath afforded matter of much controverſy among ſyſtematics; practitioners, however, upon this queſtion not equally diſſenting. It is eaſier for the moſt part to diſcern a thing when preſent, than to define it exactly in words.

82. In whatſoever ſenſe the ancients uſed this word, it is certain that we only make uſe of it when we ſpeak of the diſeaſed ſtate, never of the ſound. It therefore ſuppoſes a diſeaſe preſent, and conſequently the cauſe of it: but as it is a circumſtance which both happens preternaturally, and is ſomehow connected with theſe, yet in the mean time is it reckoned diſtinct. By no means, therefore, ought it to be taken for the whole of that which preternaturally happens, or for the ſlighter affections, which do not merit the name of a diſeaſe.

83. In the ſick perſon there are various alienations from the ſound ſtate (38.), which manifeſt themſelves to the ſenſes, whether you view the functions themſelves, or the bulk and condition of what things are excreted, or even the ſenſible qualities of the body.

84. Theſe phænomena (83.), when the ſick perſon is ſenſible of them, and the phyſician perceives, both conclude that diſeaſe is preſent, for that they cannot be the effects of health, and that there are ſome things in the body which require to be corrected.

85. There are ſome who improperly call theſe the diſeaſe itſelf (41.), becauſe they are connected with it, co-exiſt,

co-exiſt, continue, and go away at the ſame time. That does not, unleſs very rarely, manifeſt itſelf to the ſenſes (44.): for the moſt part, it is only to be detected by reaſoning; neither is it better known by the ſick perſon than by the phyſician. However, as they are preternatural, and are intimately connected with the diſeaſe, they are properly enough called ſymptoms, being ſuch things as happen with the diſeaſe.

86. A ſymptom, therefore, denotes ſome viſible alienation from the natural ſtate, which ariſes in the body from diſeaſe, but in ſuch a manner as to be conſidered diſtinct from it, and its cauſe; nor does it continue longer than the diſeaſe.

87. There are three things in the ſick perſon which are preternatural: the diſeaſe, the cauſe of it, and the ſymptom; theſe are mutually connected. As the diſeaſe cannot be without a cauſe, ſo it cannot be without a ſymptom; nor the latter without the former. In every diſeaſe there happens ſome viſible change, either in the functions, in the excretions, or in the ſenſible qualities of the body (38.) Neither is that to be called a ſymptom which continues after the diſeaſe, but the diſeaſe itſelf.

88. The ſymptoms, therefore, principally make up that part of the morbid ſtate, which appears evident to the ſenſes either of the ſick perſon, or the phyſician, very little liable to doubts, which lies open of itſelf, and does not require the aſſiſtance of art to be detected.

89. But ſeeing all the phænomena which preternaturally happen in the ſick cannot be ſaid to have the true nature of a ſymptom (86.), nor always flow from the ſame ſource, it is neceſſary to diſtinguiſh

ſome from others, as they may flow from different ſources.

90. Some depend upon the morbid ſtate immediately as their cauſe, being ſo many of the effects as ariſe from thence, and are inſeparably connected with it; and theſe indeed are the genuine ſymptoms; according to the three circumſtances which happen in the ſick (87.), it will be proper to make a threefold diſtinction into ſymptoms of the diſeaſe, ſymptoms of the cauſe, and of the ſymptom.

91. Some viſible effect, immediately produced by the power of the preſent diſeaſe, is called a ſymptom of the diſeaſe. The relation which it bears to the diſeaſe is ſimilar to that which it bears to its cauſe (66.); and when that is produced from a concurrence of many ſtates (68.), the concurrence of many ſymptoms is wont to attend that kind of diſeaſe.

92. An inquiry into theſe (91.), therefore, is extremely uſeful and neceſſary; for they not only prove the exiſtence of diſeaſe, but likewiſe point out the nature of it; effects certainly declare the nature of their cauſe: But the cauſe of the diſeaſe is likewiſe the cauſe of its ſymptoms.

93. But if the ſymptom can be derived from the cauſe, antecedent to the diſeaſe itſelf, we underſtand it to be a ſymptom of the cauſe; the word cauſe being taken in a wider ſenſe (61.). This happens ſo often as the circumſtances of that which cauſes the diſeaſe are various, and in like manner their effects, as ſome part of theſe may only concur to produce the diſeaſe; hence it becomes a proper cauſe of it; another part of the diſeaſe, produced occaſionally, and ſooner or later brought into action, may diſcover different effects, ſupervening the diſeaſe indeed, but not having ſuch a connection with it but that it

may be without them. That the ſymptoms of the cauſe may be underſtood, we muſt take in thoſe effects acceſſary to the cauſe of the diſeaſe.

94. Wherefore it is evident, that theſe ſymptoms (93.) can be taken away when the diſeaſe ſtill continues, and may, on the other hand, remain when it is removed: Sometimes they may prove far more dangerous than the diſeaſe which they attend; at other times they may diſcover one diſeaſe to have ſupervened upon another; one of which, becauſe it is either prior in order of time, is more manifeſt, or more violent in degree, is only taken for the diſeaſe; the other, therefore, not being regarded in itſelf, but only in its effects, or even altogether neglected. Hence, when the principal diſeaſe ceaſes, the ſymptom of the cauſe ſtill remaining, we loſe the idea of it, and the diſeaſe, which lay concealed, now becomes manifeſt: Which circumſtances, when rightly conſidered, will ſhow, that that diſtinction, taken in its true ſenſe, is neither paradoxical nor ſuperfluous, but rather exceedingly uſeful, as well for making a diagnoſis as prognoſis of diſeaſes.

95. Either kind of ſymptoms (91, 93.), if by their own power they have produced ſome evident affection, it is called a ſymptom of a ſymptom. Under which denomination all the reſt of the morbid effects come, which in ſucceſſion follow one another; only they may have ſome anterior ſymptom for their cauſe, nor do they continue after it is removed (86.).

96. Theſe (95.), therefore, have their beginning in the diſeaſe itſelf, or in the cauſe of it; from thence they are known, and theſe being taken away, thoſe conſequently are removed; and although, perhaps, upon the intervention of many others they may only cohere with them, by a proper analyſis, however, they may aſſiſt a little in knowing the diſeaſe or the

cauſe of it. Nor can we have a complete hiſtory of diſeaſes if they are omitted.

97. It is likewiſe to be remarked, that there happens in the ſick, not unfrequently, viſible effects, which if you obſerve in their riſe, may be wholly referred to ſome of the ſpecies (91, 93, 95.), but are ſo firmly rooted in the body as to continue after the diſeaſe; hence we do not look upon them as ſymptoms, but as ſecondary diſeaſes, and are therefore more to be attended to, becauſe they require a particular cure.

98. There are beſides another kind of phænomena occurring in diſeaſes, which, when they happen in the ſick, and deviate at the ſame time from the laws of health, may be comprehended under the head of ſymptoms; but of a very different origin from the former, with which they ought by no means to be confounded.

99. Man is not a mere machine, which receives and ſuffers injuries without reſiſtance. There is a mind within, which being rouſed, and rendered uneaſy from the ſenſe of pain, occaſioned by diſeaſe, bends the whole force of that influence which it hath upon the body, as it were to repel the enemy (4.). The body itſelf likewiſe endowed with the power of excitement, which, although it be moderate in health, yet when irritated by any preſent evil, is hurried into violent efforts to oppoſe the attacks of the diſeaſe. There is even a ſympathy and conſent between the parts themſelves, conſtituting one common principle, which, by their joint aſſiſtance, they endeavour to preſerve entire; ſo that, when any one ſuffers injury, others, not unfrequently all, with their united force, aſſiſt in relieving the part injured, and in reſtoring that which is in common to all the health of

each, and proper to itſelf as depending upon others (5.). The nature of the body being provided with ſuch powers, not only reſiſts the cauſes of diſeaſes, but entering a conflict (51.) oppoſes force by force. Becauſe ſhe cannot exerciſe the functions in that regular tenor as in health, ſhe raiſes inordinate motions, and often creates greater diſturbance than the diſeaſe, from whence ſymptoms are accumulated upon ſymptoms.

100. Of this ſort, for the moſt part, are unnatural deſires and averſions to different kinds of food, ſpaſmodic motions, convulſions, a diſordered circulation, fevers, exanthemata, abſceſſes, hæmorrhages, vomitings, diarrhœas, ſweats, and many others, which, although they attend and ſupervene upon diſeaſes, are by no means to be reckoned the conſtant effects flowing from the cauſe of theſe, or is it proper to include them with the ſymptoms properly ſo called (86.).

101. They are rather therefore to be denominated the auxiliary efforts of nature, or the active ſymptoms, ſeeing they are excited by her ſtruggles, which are deficient when her ſtrength is broken or exhauſted; neither do they manifeſt themſelves in the ſame way in the ſame diſeaſes, and the moſt ſalutary cures may enſue upon them, but are inimitable by art, or only point out a fortunate iſſue to him who attentively obſerves. Theſe are called by the ancients ἐπιγενόμενα, or ſupervening; not all of them, however, can be comprehended under that name.

102. But if you view theſe in their whole extent, there are few diſeaſes with which they are not connected; nay, there are many which they not leſs certainly and conſtantly attend than any other ſymptoms; ſo that we might ſay with truth, that they

were made up of the combined effects of the morbific powers, and the powers of nature reſiſting; theſe are they which may be more properly called the efforts of nature fighting for her own ſafety (51.). Nor does he rightly explain the nature of theſe, or the phænomena with which they are attended, who only conſiders the ſymptoms of the firſt ſort (90.), and neglects the operations of nature.

103. Hence it is evident how uſeful and neceſſary an accurate obſervation, as well as a diſtinction of the ſame, may be to a practitioner, that he may not be alarmed with vain fears at things importing no danger, or raſhly oppoſe the efforts of nature endeavouring a cure, which are not to be diſturbed, but properly regulated (9, 18, 19.).

104. They are miſtaken, however, who imagine, that nothing but what is ſalutary can flow from this ſource. Nature commits her own errors, and ſometimes reſiſts with a force, which, becauſe it exceeds the due bounds, is weaker than is requiſite, or not properly directed to the parts where it ſhould be, often occaſions much danger, and even death itſelf. It is therefore the buſineſs of a prudent phyſician not to remain an inactive ſpectator of nature attempting her own cure, but to reſtrain her when too violent, to ſtimulate when languid, and, when deviating from the right way, to bring her into the proper track.

105. Neither are there wanting morbid effects of that ſort, which ariſe from the diſturbances ſo excited, as the ſymptoms of ſymptoms (95.), and in like manner as theſe (97.), are ſo fixed in the body as to terminate in ſecondary diſeaſes. Even the operations of nature prevailing, ſo as to overcome, are

not entirely free from them. Victory is ſeldom without an wound.

106. There is a third ſource of them remains to be taken notice of, which ſupervene upon diſeaſes, and to be totally diſtinguiſhed from the two former, although they are connected with the ſame. Theſe may be called fortuitous or accidental, ſeeing they are occaſioned by ſuch things as are caſually brought in the way.

107. The ſick as well as the ſound (6.) are placed in conſtant viciſſitudes of the circumambient air, of things ingeſted, applied externally, and of the proper functions, for which reaſon, it is difficult to accommodate all, and every one of them, to the morbid ſtate, ſo as to aſſiſt the phyſician and nature endeavouring a cure, or at leaſt not to prove obſtructive. Every one of theſe, according to their efficacy, may affect the ſound ſtate (6.), and greatly change it; conſequently they will more ſtrongly prevail over the diſeaſed, ſeeing the natural powers, not being entire, are leſs able to reſiſt them. Hence it is neceſſary, that they muſt give out effects, which, although they are blended with thoſe of the firſt and ſecond order (90, 98.), cannot be properly attributed either to the diſeaſe or nature.

108. Nor are theſe kinds of phænomena, which may be ſaid to be fortuitous, of ſmall moment: Sometimes they heighten the diſeaſe, and render it, when mild, ſevere, and even fatal; they create a new one, change it into another ſpecies, diſturb the favourable operations of nature, pervert the effects of remedies, and put off the opportunities of exhibiting them. At other times they are ſalutary, and ſo happily terminate, as if the recovery of health ſeemed owing to them alone.

109. And there are times when the ſame continue and ſubſiſt longer than the diſeaſe which they ſupervene, and at laſt more manifeſtly diſcover their origin.

110. Wherefore they ought to be carefully remarked and diſtinguiſhed, that every thing occurring may be referred to its own cauſes, and caſual effects not attributed to the diſeaſe, nature, or the remedies adminiſtered, to the great detriment of medical hiſtory. They ought eſpecially to be aware of confuſion, who comprehend ſymptoms of this kind under the general head of επιγενομενων, or ſupervening, (101.)

111. From which circumſtances (90. to 110.) duly conſidered, we are apt to conclude, that the ſymptoms which occaſionally flow from the ſources mentioned, are indeed the conſequence of the diſeaſe, but that not all, nor every one of them, are therewith neceſſarily connected, or with each other, ſo that each one in particular does not admit of the ſame diſquiſition, or have they the ſame weight in making a diagnoſis or prognoſis of the diſeaſes they attend, or, as is proper, in taking indications of cure.

112. There are ſome indeed which may be called neceſſary, as they are ſo connected with the diſeaſe, that whenever it begins to evolve its effects, it never happens, but that ſooner or later they muſt manifeſt themſelves. Of this ſort are all ſuch as ariſe from the diſeaſe as from their proper cauſe, and have their whole progreſſion placed in its nature. They are likewiſe called eſſential or primary.

113. To this head are principally referred the ſymptoms of the diſeaſe (91.) which flow from the firſt ſource (90.) and their effects (95.); from the other

ſource (98, 99.) are derived very many of a variable nature, not conſtantly concomitant; and hence, according to their nature, appear differently in the ſame diſeaſe. But, how many morbid powers, and how many powers of nature reſiſting, concur to produce one certain ſpecies of diſeaſe, ſo many ought to be accounted neceſſary, whatever active ſymptoms ſo ariſe (101.), that providing they were abſent, the diſeaſe would paſs into a different kind. From the third ſource none can be properly referred thither.

114. The reſt therefore, as they are ſo looſely connected with the diſeaſe, that they may be preſent or abſent, it will be proper to call non-neceſſary.

115. Further, there are various degrees of the neceſſary (112.), nor is the manner of all the ſame. Diſeaſe, like health, is not begun and finiſhed all at once; nor does it produce whatever changes happen all at the ſame inſtant of time, but manifeſts its effects in ſucceſſion one after another: Even the phyſical powers of the morbid ſtates have their own gradual increaſe, in proportion to which nature varies and heightens her efforts: By degrees likewiſe, the turbulent motions are communicated to different parts and faculties, and the ſympathetic affections ſtirred up; ſo that the diſeaſe, in its whole courſe, does not ſteadily keep the ſame form, or is it conſtantly attended with the ſame ſet of ſymptoms.

116. Hence there are ſome indeed which ariſe together, continue, and terminate with the diſeaſe, and are its conſtant concomitants, which therefore may be called inſeparable, perpetual, or ſimultaneous: Others, although they may ſupervene upon the diſeaſe, are not however inſeparable; neither do

they appear indifferently in any time of the diſeaſe but at a certain period, for which reaſon they may be called temporary.

117. An exact ſeparation and diſtinction of each kind (116.) from the non-neceſſary, (114.) and a diligent inquiry into the manner in which they are related to their own particular diſeaſe, will lay the principal foundation for erecting the diagnoſis as well as the prognoſis. From theſe the pathognomonick ſigns and characteriſtic marks are obtained, by which one diſeaſe may be diſtinguiſhed from another; nor can any more certain definitions be otherwiſe given, or hiſtories of diſeaſes compiled, than what are drawn from this ſource; upon them the true knowledge of the nature of the diſeaſe is reſted (45.), which is inveſtigated by the analytic method; beſides, the temporary are allied to different ſtages and degrees of diſeaſes very evident to be diſcerned.

118. The non-neceſſary are by no means to be overlooked, becauſe they leſs regularly occur; of how great utility theſe may be when accurately obſerved, will appear from what has been ſaid (94, 101, 103, 108, 110.). The important matter of crudity in diſeaſes, coction, criſis, and various terminations, is in a great meaſure contained in theſe.

119. But whatever in the ſymptoms of any kind manifeſts itſelf alienated from the ſound ſtate, can be wholly referred to the functions, excretions, or ſenſible qualities, and may be found under theſe titles when need requires.

SPECIAL PATHOLOGY.

Of the Natures of particular Diſeaſes.

120. The general definition of a diſeaſe before given, only comprehends what is common to all and every diſeaſe, and does no more than point out in how much they differ from the ſound ſtate: But they differ among themſelves, and every one in particular gives ſome peculiar vitiation of health: To know which exactly, is the principal buſineſs of the phyſician (44.), from whom is expected a cure of each (23.). Hence we muſt proceed from the general to the ſpecial.

121. That, by which it happens that one diſeaſe differs from another, is placed in the peculiar nature of every one, in ſuch attributes as it cannot be without, or in ſuch caſual ſtates as may be preſent or abſent; the nature of the diſeaſe therefore, and conſequently the name, not being changed. The former are called eſſential and primary differences, the latter accidental and ſecondary. Of each kind an accurate knowledge is exceedingly uſeful: The one conſiders diſeaſes as they are circumſcribed by their proper limits, and as they occur in the body, to be known and cured by the phyſician; the other diſplays the different natures of poſſible diſeaſes. Hence it is evident in what order they ought to be treated.

122. The immenſe number and various complications of diſeaſes oblige us to proceed in the manner of geometricians in explaining their natures, the moſt ſimple being firſt premiſed, to lead beginners to a knowledge of the moſt compound.

123. It will therefore be neceſſary to conſider ſeparately very many vitiations which never occur ſingly in the ſick, and to refer many affections of a more ſimple nature among diſeaſes, which, according to the vulgar notions, are not accounted as ſuch, and are even by Pathologiſts brought under the head of cauſes. There is a certain univerſal ſympathy between the parts of the human machine, by which, when in health, they afford mutual aſſiſtance to each other, and are fitted by the laws of nature for different purpoſes; in like manner, in the morbid ſtate they ſympathize together, and reciprocally communicate their affections. Hence it happens, that in practice real diſeaſes ſeldom occur, the moſt ſimple idea of which does not include ſomething compound. There is likewiſe a certain virtue in health by which it protects itſelf againſt ſingle vitiations, nor does it ſuffer the tenor of the functions to be immediately diſturbed by the ſolitary alienation of any one part, ſo that the diſeaſe only breaks out at laſt when the evil has been more widely diffuſed.

124. But there is no reaſon wherefore the doctrine concerning that ſort of diſeaſes ſhould be omitted in this place: It certainly very much contributes to the underſtanding the compound, which ariſes from the confluence of the ſimple; but it likewiſe throws light upon the prediſpoſitions to diſeaſes (75.), to be afterwards conſidered. Nor is it a matter of importance whether they are called diſeaſes, affections, vitiations, or diatheſes.

The more ſimple Diſeaſes.

125. As a diſeaſe is inherent in the body (36, 42.), it will have its ſeat in the parts of which it is compoſed,

poſed, and, according to the diverſity of theſe, the diſeaſe itſelf will be different.

126. It will therefore occupy the containing or the contained parts, the ſolids, or the fluids they contain. This is the primary difference of diſeaſes.

127. Both kinds of parts are endowed with their own properties, by which they are fitted for the uſes required; ſome of theſe are in common, others are more or leſs reſtricted to a ſingle ſpecies of ſome particular genus; as they ought to contribute in a different manner to the functions of health. The ſound ſtate can be without neither, nor is an alienation of the former leſs hurtful than that of the latter. Hence ariſes another difference of diſeaſes.

128. There is likewiſe a certain mutual relation and proportion of one part to another, and of certain conditions to others, by which, from their inclining too much to one ſide, not only the ſymmetry, but likewiſe the harmony of the functions is diſordered. From which circumſtance there ariſes a further ſubdiviſion of diſeaſes.

129. According to theſe claſſes (126. to 129.), we ſhall in order exhibit a hiſtory of the more ſimple diſeaſes; but what is to be delivered will be more fully underſtood, if theſe things which are demonſtrated in chemiſtry concerning the conſtituent matter of the human body are firſt premiſed.

The General Chemical Analyſis of the Human Body.

130. IF we examine the conſtituent matter of the human body, we ſhall find it made up of dry and moiſt parts exquiſitely mixed.

131. Upon the different proportions and combinations of theſe, the various degrees of conſiſtence, by which the ſeveral parts of the human body ſo much differ from one another, chiefly depend.

132. Mere water conſtitutes the moiſt portion, fixed equally in the hardeſt as well as ſofteſt parts, which being taken away, nothing but what is dry remains.

133. This ſubſtance of the greateſt ſubtilty, diſſipating with a gentle heat, compoſes the greateſt part of the whole body, and conſtitutes tenuity in the juices of the ſame, and ſoftneſs and flexibility in the ſolid compages.

134. The dry part being ſtiff and coheſive, not eaſily diſſipated by heat, is reſolved into three diſtinct ſubſtances of a different nature; an inflammable, which is the pabulum of the fire; a ſaline part, which unites with the water; and laſtly, an earthy part, which reſiſts fire and water.

135. The inflammable part, the principle of heat and light, temperating acrimony, gives tenacity to the ſolid and fluid parts.

136. The ſaline part, ſheathed by the coaleſcing phlogiſton, and diluted with water, by its intervention connects the one with the other.

137. The earthy part, the baſis and ſtabiliment of the whole machine, for a protection againſt the injuries of the air, fire, and water, and diffuſed through all the parts of the body, but not in equal proportion, gives the requiſite conſiſtence to each of the fluids, and due firmneſs to the ſolid parts.

138. Theſe four (132, 135, 136, 137.), although among themſelves they are very different in the found ſtate, are notwithſtanding ſo very exactly

mixed, that there is no particle, either in the ſolids or fluids, the one without the other, and in which all of them are not to be found; nor can any of them be obtained entire from the reſt without the intervention of ſome ſeparating force; wherefore it is ſcarce credible that nature, in forming, increaſing, and nouriſhing the body, uſes different elements, which ſhe firſt mixes one with another, then makes a compound of ſome with others, in that order and proportion which the diſpoſition of every part requires. Nay, ſhe rather uſes particles already mixed, and, by a ſuitable aggregation and condenſation of theſe, performs her work. Of this ſort, doubtleſs, are thoſe which both exhale from the body, with which waſte is repaired, and the alible particles as they float in the humours, or are extracted from the aliment; neither does the extent of the powers of human nature appear greater in any one thing than in this.

139. Beſides, coherence preſerves the mixture (138.), by which things that are heterogeneous are connected, that they may not make a ſpontaneous ſeparation; and it is with difficulty they can be diſunited by an external force.

140. The force of coheſion is however not the ſame among the atoms of every kind of matter, when viewed in a ſeparate ſtate; neither does it exiſt equally ſtrong among different compounds. Some have a greater affinity to others; there are likewiſe thoſe which repel one another; nor does any firm union ſubſiſt unleſs by the intervention of a connecting medium.

141. There is a ſlighter degree of coheſion in the moiſt part (132.) than the dry (134.); from which it happens, that from the different proportion

of one mixed with the other, the different degrees of conſiſtence ariſe.

142. Of the dry portion, the earthy (137.) is of all others the moſt coheſive; for by the conjunction of its atoms into the neareſt contact, it will give a degree of hardneſs almoſt impenetrable, unleſs it is attemperated by the intervention of others. That remains alone, when the violence of the fire and air has diſſipated the reſt. The harder bones, when calcined to whiteneſs by the fire, retain their form and coheſion; although there is nothing left but mere earth. The greater proportion of earth any part contains, and the better addenſate, the greater is the degree of firmneſs. That the human body, compoſed of different materials, may be alone what it is, and continue ſo, and that individual parts may not be indiſcriminately blended together, is principally owing to the earth. This forms the chemical ſkeleton of the body, and is the principle of coheſion, ſtability and inertneſs.

143. But is there need of the interpoſition of a gluten, a watery, and an unctuous ſubſtance, that the terrene particles, naturally diſpoſed to ſeparate, may be held together? Certainly there is; as often as there is required a fluid, ſoft, flexible, or friable coheſion, *i. e* leſs firm, which mere earth renders obſtinately ſtiff. The immediate contact of its own particles is ſufficient to form coheſion; it is only attemperated by the interpoſition of other ſubſtances, and is lax in proportion as the quantity of theſe is greater than the earth. Even the gluten itſelf owes its tenacity to the earth which it contains.

144. Whence does it happen then, that the parts of the human body, when burnt in the fire, fall

down into aſhes, not cohering? The volatile parts being forced off, empty cells are formed in the terreſtrial maſs, by which means its particles are too far ſeparated from the neareſt in contact: We even know from the ſmoke, that a great part of the earth itſelf is diſſipated in the air along with the ſpirit, ſalt, and oleaginous matter. Hence it is, that the parts which abound with a great quantity of volatile matter only exhibit this phænomenon; the ſame thing does not take place where the earth is more compacted.

145. The ſaline (126.) and the inflammable parts (125.) are interpoſed to the water and earth, the extremes of fluidity and firmneſs, which are not unitable in their naked ſtate; the latter joins with the earth, the former with the water, and readily coaleſce one with another; ſo that ſubſtances diſpoſed to ſeparation are by their intervention held together: The water embraces the ſalt, the ſalt the phlogiſton, and the phlogiſton the earth, in ſuch a manner as to effect a permanent union of all the three parts; the degree of coheſion with which they are combined following the ſame order that is agreeable to the particular diſpoſition and mutual affinities of each.

146. Wherefore it is evident, that the conſtituent matter of the human body is every where the ſame of the ſame elements, the only difference conſiſting in the different proportion of theſe. A great quantity of the dry part and little of the moiſt conſtitutes firmneſs; and on the other hand, a great quantity of the moiſt with little of the dry gives fluidity; nor does any otherwiſe a hard part differ from a ſoft, or a thick fluid from one of greater tenuity.

147. The dry ſubſtance, therefore, being increaſed in proportion to the moiſt, or the latter to the former, a fluid can be converted into a firm part, and a firm part into a fluid; ſolids can be rendered harder or ſofter, fluids thicker or more tenuous: The proportion of the materials mixed determines the degree of coheſion. This operation, familiar to human nature, does not require a different kind of materials.

148. Is it then difficult to underſtand how mankind in animals and vegetables find matter fit for nouriſhing, increaſing, and repairing the waſtes of the body? There is a watery, a ſaline, a phlogiſtic, and earthy part in all theſe the ſame, not differing in the general mixture: And whence it is, that the human body in its turn yields nouriſhment to theſe.

149. Is it not likewiſe evident wherefore it is ſo much diſpoſed to putrefaction? The great quantity of moiſt and inflammable ſubſtances, the laxer texture in general of the firm parts, and the great number of different fluids every-where through them diffuſed, renders it eaſily ſuſceptible of that kind of corruption: So that the power of life may indeed ſeem truly wonderful, which preſerves for ſo many years entire a machine expoſed to the air, and a native heat, the moſt powerful inſtruments of putrefaction.

The moſt ſimple Diſeaſes of the ſolid Parts.

150. The ſimpleſt idea of a ſolid is, when it is conſidered in how much it differs from a fluid. That is common to every ſolid: But it is wholly reduced to the coheſion of matter (145.). The ele-

ments conſtituting matter are the ſame in both (*ibid.*), the proportion being only varied. That which determines the different degrees of it in the firm parts in reſpect of coheſion, is principally to be attended to by the phyſician (147.).

151. The moſt ſimple vitiations, therefore, which can be known and treated, muſt likewiſe belong to coheſion: Nor is there any other thing in the elements or temperature to be found, the knowledge of which is uſeful and neceſſary. This is the firſt line of Pathology.

152. Coheſion can be faulty in two ways, either by being too little, or in exceſs; the latter is called rigidity, the former debility. Theſe two diſeaſes have a reference. There is not room for a third, a ſolution of unity; for when it happens that there is no coheſion, the idea of a ſolid is taken away.

153. A knowledge of the due degree of coheſion, by which the firm compages is fitted for the functions of health, will point out the nature of either diſeaſe (152.). Neither a flinty hardneſs, nor any degree of ſoftneſs indifferently, can fit the human body compoſed of innumerable parts, every one of which ought to be actuated by its own motions, yet not to ſeparate from their mutual connections; likewiſe for the fluids interfuſed, which muſt not only be contained, but differently moved, conveyed, and changed; ſo that the middle degree of ſolidity, placed between the two extremes, conſtitutes the requiſite firmneſs.

154. Coheſion is not the ſame in all the parts, but a proper degree of it is given to every one, according to the uſe for which it is intended. In the line of firmneſs, from the firſt ſtate bordering on fluidity, and as it were abſorbed in this, continued to the

hardneſs of bone, very many degrees of coheſion, greater or leſs, intervene, each aptly aſſigned to its own parts, any alteration of which the human œconomy cannot bear.

155. There is a certain generical latitude in health, likewiſe in the ſtrength of the ſolids; if we compare the bodies of different perſons, and the ſimilar firm parts of theſe with one another, as they mutually differ according to age, ſex, temperament, &c. The requiſite degree of coheſion in any ſingle perſon does not ſo much conſiſt in a limited meaſure, as in a relative proportion between the parts.

156. Hence it is evident, that the ſame degree of coheſion is ſometimes natural, and at other times morbid; nor can a deficiency or exceſs be accounted morbid, unleſs when conſidered comparatively with the ſymmetry of the other parts.

157. It is called debility, when the ſtrength of coheſion in the matter compoſing the ſolid is ſo ſmall, that it cannot bear the motions which the functions of life and health require, but too readily gives way.

158. That coheſion of the body, however, is not eſteemed ſound, which only anſwers to a very regular manner of living, and does not endure moderate exceſſes with impunity. Man, fitted by the wiſdom of the beneficent Creator for more excellent purpoſes, and placed in ſo great a viciſſitude of things, continues to enjoy health, which is not broken by the leſſer injuries.

159. So that the debility (157.) of a ſolid is, when being acted upon with any thing of a greater force, it is either ſo much diſtracted that it cannot recur, coheſion ſtill remaining, or is totally ruptured and broken. From whence ariſe two genera of this vitiation, differing according to the diverſity of parts.

160. To the firſt genus belongs,

I. Laxneſs and flaccidity in the ſoft parts, when by too ſmall a force they ſuffer themſelves to be ſtretched and dilated beyond meaſure.

II. Inertneſs in the parts elaſtic by nature, when, like wax, they retain any impreſſion made, and do not by their reſiliency recover their former ſtate.

III. Flexibility in the bones, when having loſt their firmneſs, they too readily yield to any incumbent or diſtorting force, and do not preſerve their proper ſhape.

161. The laſt genus (159.) comprehends,

I. Tenderneſs and gracility in the ſoft parts, the fibres of which, becauſe they are too ſmall when ſtretched, are too eaſily broken.

II. Tabidneſs likewiſe in the ſoft parts, when macerated in corrupted humours which they contain, long ſoaked in watery, oily, or mucilaginous matters, or corroded with acrimony, they become friable, waſte, and loſe all coheſion. Putrefaction, by its inteſtine motion, agitates the watery, ſaline, and phlogiſtic parts, and evolves them from the interſtices of the earth. This we know from the delicate tenderneſs of the fleſh in an incipient putrefaction.

III. Fiſſility in the parts naturally elaſtic, when, by reaſon of the too dry texture, they are leſs pliant, and cannot be extended, but they contract chinks, and the fibres are ſplit in their longitudinal direction.

IV. Fragility in the bones, is, when the matter of which they are compoſed, deprived of the oil and gluten, or corroded with acrimony, conſequently the firmneſs of coheſion diminiſhed, is broken by the ſlighteſt force.

162. The general cauſe of all theſe ſpecies of debility (160, 161.) is in the earthy element, which

forms the baſis of the ſolids (142.), the ſurfaces of contact among the particles being too few, and not cloſe enough; for the ſtrength of coheſion is in proportion to the number and proximity of theſe. Hence exility of the fibres, either connate or contracted by a certain regimen, an exuberance of fluids in proportion to the ſolids, a redundant quantity of water, mucus and fat, or a deficiency of the ſame without compactneſs of the earth, a violent diſtenſion of the parts beyond their tone, different acrimonies inſinuated into the firm parts by means of the humours, by attracting and retaining the water, diſſolving the phlogiſton, by attenuating and corroding the earth, and mixing them one with another confuſedly, are to be referred thither.

163. Whoever conſiders the twofold injury to which a debilitated ſolid is liable (159.), and compares it with the requiſites of health in different parts, will eaſily perceive, that innumerable prediſpoſitions to diſeaſes of great conſequence may be owing to this vitiation, eſpecially if, from an incongruous manner of living, or any other cauſe, the noxious powers have acceded.

164. Rigidity (152.), an affection oppoſite to the former, as it is here underſtood, alledges an exceſs of coheſion, by which it reſiſts extenſion more than the nature of health requires or can bear (153.).

165. It occaſions, according as it varies in degree, either an obſtinate ſtiffneſs, or an inflexible brittleneſs. Wherefore it will both be proper to diſtinguiſh a double genus, and to note the following ſpecies of theſe:

I. Stiffneſs in the ſoft parts, when with difficulty they admit of diſtenſion and ſeparation, of which we have an example in the fleſh of aged animals.

II. Hardneſs likewiſe in the ſoft parts, when contrary to nature they terminate in cartilage or bone.

III. Fragility, vitrioſity in the bones, different from the ſpongy fragility (161. IV.), ariſing from the too great condenſation of matter, by which it happens that they are more eaſily broken by any violent effort, than if by yielding a little they maintained their coheſion. This we know from the great brittleneſs of the bones in the winter time; nor is the ſoft parts themſelves altogether free from this defect.

166. This ſtate (165.) alledges an immoderate quantity of the terreſtrial matter abounding in the ſolids, or too much compacted; ſo that the ſurfaces in contact are increaſed in number, or too cloſely approximate, for want of a ſufficient quantity of interfuſed moiſture. To this effect nativity, age, ſex, temperament, manner of life, and conſtitution of the atmoſphere, contribute a ſhare.

167. It variouſly impedes the circulation of the humours, ſecretion, excretion, motions, and ſenſes, when it obtains either in the body in general, or in a particular part.

168. Either kind of vitiations are ſo general, that there is none of the firm parts which is not ſubject to them, ſeeing they affect that which all have in common. They therefore not only pertain to the ſmalleſt ſolid moſt ſimply conſidered, whether as a fibre or as a crude coagulum, but even to the membranes, canals, viſcera, fleſh, ligaments, tendons, cartilages, bones, &c. which in common have the ſmalleſt ſolid for their component matter. Nor are theſe parts excepted, which are conſolidated, or become more denſe from a concretion of the compreſſed veſſels, their juices

being exhauſted or condenſed, nor thoſe which, by epigeneſis, in any way whatever concrete.

Diſeaſes of the living Solid.

169. I call that a living ſolid which is endowed with a vital power.

170. The vital power of a ſolid is that by which it contracts itſelf, and ſhrinks when any irritation is made.

171. Irritation is whatever by its ſtimulating force excites the vital power to action. But to this are to be referred not only acrids, but others of a quite different virtue, which, internally or externally applied to the ſolids, induce ſome change of the ſpontaneous ſtate. There are, moreover, occaſional cauſes, conſequently not the true cauſes of contraction; ſeeing they never anſwer to the action of ſtimuli as the effect, nor is it produced in a ſolid deprived of life.

172. It will therefore be allowable to ſuppoſe a ſolid endowed with two properties, the one of perception, by which it perceives irritation; the other of moving, by which it moves itſelf and oppoſes, as it were, force by force, becauſe it rouſes it from a ſtate of tranquility.

173. Hence, when life acts in a ſolid, there is given a ſeries of three ſtates, viz. of irritation, perception, and contraction, which follow one another in the quickeſt ſucceſſion, each exciting the other, although not with equal force, nor always by the ſame neceſſity.

174. Contraction indeed ſeems conſtantly proportioned to perception, and, according to the degree of the latter, that of contraction will be greater or

ſmaller. But the ſame thing does not hold between irritation and perception, whether we conſider the nature of the ſtimulating body, or the parts which it affects: Nay, there is here ſo great a variety as cannot be reduced to any certain rules.

175. For although it is to be believed, that that power is diffuſed through the whole of the living body, reaſon and experience however teach us, that it is not equally ſtrong in different parts, but is more acute and ſtedfaſt in ſome, and leſs, both as to its force and duration, in others; and even there are, in which it is ſo very ſmall as to be ſcarcely perceptible. It ſeems, however, to have been lately eſtabliſhed by the penetrating induſtry of Dr Haller, that the higheſt in degree is the heart, after that the ſtomach and inteſtines, next the diaphragm, and laſtly, the other muſcles.

176. Different degrees of that power are likewiſe obſervable in different perſons, according to the diverſity of age, ſex, temperament, manner of life, the gravid and puerperal ſtate. Peculiarity of conſtitution and habit alſo make a difference.

177. Whence it happens, that every perſon or every part is not equally affected by any irritation, but that the ſame thing may prove ſtimulating to one, and not to another in different perſons.

178. There is a certain ſympathy and conſent among the living parts, by which they afford mutual aſſiſtance to each other, and one excites another into one common contraction, although ſingly irritated.

179. Likewiſe the animal power, which influences the ſenſes, communicates with the vital power, which, when vehemently affected, can prove an irritation to the latter, and *vice verſa.* Where-

fore it is evident, that the mind is ſtrictly engaged in that intercourſe.

180. It cannot remain doubtful to any one conſidering theſe things (169, 180.), of how much importance the effects are which flow from the vital principal, as well in health as in diſeaſe. A great part of the preſervative, deſtructive, and curative powers of human nature, reſt upon them (4, 5, 37, 99, and ſeq.): For while it is acted upon by the morbid irritations, different affections are produced, according as its conſtitution differs in degree in different perſons (176.) and in different parts, (175.). To it are chiefly owing thoſe efforts of nature which conſtitute the ſecond ſource of ſymptoms (101.).

181. Whatever pertains to the mind, and is called by Hippocrates Ενορμων, or the impetuous part, does not fitly enough explain why it acts without conſent, is not ſubſervient to the will, and even for ſome time exiſts in the parts, after they have been cut out of the living body. It would ſeem, therefore, to be with greater propriety attributed to the body itſelf; and yet it cannot, in a ſtrict ſenſe, be comprehended under the title by which I have diſtinguiſhed it, viz. the faculty of perception (172.).

182. But ſeeing its action is not ſo manifeſt in the fluids as in the ſolids, one would be apt to conclude, that it rather reſides in the latter than in the former, in ſuch a manner however, as to render it probable that there is ſome part of it occultly contained in the fluids themſelves, from which the ſolids are produced, unleſs we are more inclined to believe, that it is inſtilled immediately upon concretion.

183. And

183. And when it can be preſent or abſent, even while the ſolid is entire, we can ſcarcely refer it to the nature of that as viewed in itſelf ſimply. For which reaſon, it is improperly looked for in the elements of the firm parts, in the mixture of theſe, or in the gluten, as they remain unimpaired after death, and do not ſeem to be greatly changed. It is obſerved by nobody, that a fibre the moſt ſimple (150.) that can be conceived is endowed with life.

184. Neither muſt we precariouſly aſſume a ſuppoſed fabrication of the ſolids as the foundation of that power, ſeeing no place can here be given to the laws of mechaniſm (174.).

185. Nor can elaſticity, gravity, attraction, repulſion, efferveſcence, exploſion, and the other powers of inanimate bodies celebrated by naturaliſts and chemiſts, with any degree of reaſon or appearance of truth, be here admitted. Is it an electrical power? Time may diſcover.

186. Wherefore we may with good reaſon diſtinguiſh the vital power from every other moving power of any bodies whatſoever, as a principle *ſui generis* inherent in the firm parts, which in acting obeys laws peculiar to itſelf, only to be detected by obſervation.

187. But, when there can be no fibre aſſigned, which, while it continues in life, conſiſts of a mere ſolid, and through which there is not diffuſed more or leſs of a fluid matter (182.), and that ſoftneſs rather than hardneſs is favourable to the vital power, and that this itſelf, unleſs conſtantly ſupplied, quickly vaniſhes; it may be allowed to doubt whether the ſolids may have it in themſelves, or if it is owing to ſome ſubtile fluid inherent, or at leaſt ſuch as they can have in reſerve for a long time, without

any new influx whatever. Beware, however, of ſuppoſing that the common fluids are here meant.

188. From which conſiderations (169. to 188.) it follows, that the principle of this motion is of ſo great importance, as not only deſerves to be attended to by phyſiologiſts, but even more by pathologiſts, ſeeing it may be liable to its own vitiations, which may both be very frequent, and, whether ſolitary, or complicated with other diſeaſes, may variouſly diſturb the functions; they cannot, however, be included either with the ſimilar or elementary diſeaſes of temperature, or whole ſubſtance, or with theſe by the ancients denominated organic; neither can they be fitly ranked amongſt the vitations of the fluids, ſo called by the moderns, and therefore require a particular title to themſelves. Why may we not in this follow our predeceſſor Hippocrates? who, beſides the containing and contained parts, with reaſon inſiſted, that we ſhould have in contemplation the τα ορμωντα, or the impetuous principle in the body.

189. The vital power can be faulty in two ways, viz. by exceſs and deficiency. The latter I call torpor, the former irritability. The middle ſtate between the two extremes conſtitutes health. Some improperly confound debility and rigidity (151.) with theſe two affections.

190. Irritability, as I underſtand it, is when the ſenſibility of the living ſolid is ſo great, that upon the ſlighteſt irritation it breaks out into ſuch violent motions as diſorders the tenor of the functions.

191. The known effects of any irritation, when compared with the force, duration, reciprocation, and extent of the contractions which thereupon enſue, will point out the degree of exceſs in the motions excited.

192. It is to be remarked, however, that the difference of ſenſibility, as well in different perſons as in different parts of the ſame perſon, is included within the limits of health (175. to 178.). Neither is the intolerance of any particular irritation to be inſtantly accounted a morbid affection, although it may induce diſeaſes.

193. But that exceſs is either general through the whole body, which, for the moſt part, is joined with a greater irritability of mind; or only in a particular part, which, becauſe it is not of the ſame temper with the other parts, upon every ſlight occaſion, is thrown into diſorder.

194. But it is difficult, while we remain in ſo much ignorance of the nature of the vital power, to detect the ſources from which that evil flows. Obſervation, however, teaches us, that there is, for the moſt part, joined, 1*ſt*, a delicate texture of the ſolid compages, (161. I.); 2*d*, ſometimes a greater tenſion of the fibres, attended with mobility; 3*d*, great acuteneſs of the ſenſes; 4*th*, pretty often an acrid tenuity of the fluids; 5th, a more agitated circulatory ſyſtem. To produce theſe effects, there concur hereditary diſpoſition, youth, a mobile temperament, a climate rather hot, a more delicate ſex, an indolent manner of life, without exerciſe, or even a ſtricter regimen, with the anxiouſly avoiding every thing unaccuſtomed, acute diſeaſes, febrile diſorders, &c. That the body can be rendered more irritable by the mind (193.) is not more probable, than that the latter is by the former.

195. The general effects which ariſe from irritability can be reduced to the tremulous vibrations of the ſolids, ſhrinkings, tenſions, ſpaſms, and convulſions;

vulſions; from which are again produced pains, anxiety, contractions of the cavities, obſtructions, and inflammations; which may be ſucceeded by various impediments and alienations of circulation, ſecretion, excretion, and the other functions, as it is eaſy to ſee, when theſe irregular motions are viewed, as affecting various parts of the body, ſuch as membranes, veſſels, viſcera, glands, muſcles, moving fibres, organs of the ſenſes, &c. regard being likewiſe had to conſent, (178, 179). From whence we may be allowed to doubt, whether there be any other affection, which, in an equal degree, renders the body obnoxious to ſo many and ſo great evils.

196. Torpor (189.) infers a diminiſhed ſenſibility of the living ſolid, by which it happens, that the effort to contraction, upon any irritation made, is ſo ſmall as not to be ſufficient for producing thoſe motions which the health of the oeconomy requires.

197. It may, therefore, either obtain through the whole body, or in a ſingle part, and may, more or leſs, in degree, fall ſhort of the natural vigour. —A total abolition, univerſal or particular, is death.

198. It is commonly attended, 1*ſt*, with a coarſeneſs of the fibrous texture, contrary to the delicate gracility (161. I.), having leſs mobility on account of the greater bulk; 2*d*, an obſtinate, hard, or inflexible (165. I. II.) rigidity of the parts, and heavineſs, by reaſon of the redundance and greater condenſation of the earth; likewiſe, 3*d*, laxity and inertneſs (160. I. II.), from a watery, mucous, pinguid accumulation; 4*th*, hence a frigid, aqueous, viſcid conſiſtence of the humours, or a terrene

denſeneſs; 5*th*, a more languid circulation of theſe through the veſſels; 6*th*, dullneſs of the ſenſes, and operations of the mind. Whatſoever, therefore, can induce theſe affections in the body, are apt likewiſe to occaſion torpor. But theſe are things oppoſite to thoſe enumerated (194.), and conſequently from them will be underſtood.

199. Neither is it difficult to foreſee the evils which may accrue to the human functions from this vitiation, as there is none of theſe, which, with impunity, can be without an influx of the vital principle. Chronic diſeaſes eſpecially are thence produced, not only exceedingly obſtinate, but even incurable; ſeeing medicines avail little, on account of the languid ſtate of the powers of nature (18. and 180.)

Diſeaſes of the containing Solids.

200. THERE is not another more general, and, at the ſame time, more conſpicuous organization of the firm parts of the body, than that which forms cavities, fitted very differently by their figure, magnitude, and direction, for admitting, containing, tranſmitting, conveying, ſecreting, and excreting various matters, in ſo much that the whole ſolid compagination of the body may be comprehended under the title of containing.

201. We learn likewiſe from phyſiology, that every ſingle cavity has its own limited capacity and particular form, which renders it fit for the functions of health. Any deviation from this, inclining either to the one ſide or other, may be productive of the moſt remarkable diſeaſes, and of conſi-

derable frequency, on account of the great mutability, both of the containing cavities, and of their contents.

202. Theſe which deſerve our principal conſideration, are ſuch as belong to the exceſs and diminution of magnitude of the cavities, or of the orifices by which they admit or emit their contents. They are, of all others, the moſt manifeſt, and of conſiderable conſequence, becauſe of the various injuries, and their declaring the nature of the evils which thence ariſe.

203. The ſize of a cavity or orifice, enlarged beyond its due capacity, is divided into different ſpecies, and ſuppoſes,

I. Dilatation, Ἔυρυσμα, when the ſides of the cavity, by being too much diſtended, circumſcribe a wider ſpace than is fit. This affection can obtain in any of the cavities whatſoever, either greater or ſmaller, whoſe coats admit of diſtenſion; whether they are veſſels, ſinuſes, or receptacles. It may likewiſe proceed from the contents acting upon their ſides with a diſtending force, greater than, by their reſiſtance, they are able to overcome; by which it happens, that there is a greater accumulation, an increaſe of ſpace cauſed by expanſion, an impeded paſſage, and an immoderate impetus of the tranſmitted fluids; the ſtrength of the coats are likewiſe diminiſhed, and deprived of their external ſupport.

II. Anaſtomoſis, by this is underſtood an immoderate relaxation of the orifices of the cavity through which it admits or emits: By which means, too great a quantity, or ſomething adventitious, diſagreeable to the laws of health, enters or goes out.

The ſame cauſes which bring on dilatation can induce this (I.); beſides, there is a reſolution of their ſphincters, if any there happen to be.

III. Diapedeſis, which is ſaid to exiſt when the fibres compoſing the membranous ſides of the cavities, by being ſtretched, ſo recede from their mutual contact as to form gaping interſtices, without a ſolution of continuity, which, like cloth, allow the fluids to tranſude what they ought to contain: That evil is produced by the ſame means (I.); but operates in a greater degree, when affecting thoſe cavities whoſe coats are of a more delicate texture, or more morbidly lax (161. I.)

IV. Diæreſis, when, by reaſon of a completely diſſolved coheſion, the ſides of the cavities are perforated where they ought to be intire; or the margins of the orifices are enlarged; which thing can be effected by any mechanical force externally contuſing, cutting, pricking, and lacerating the parts, or occaſioned by rupture from the diſtending contents, by which is underſtood ρηξις, or ruption; it may alſo happen from eroſion by acrid matter, which is denominated διαβροσις, or corroſion.

204. But if a natural or morbid debility (157.) has concurred with the injuring cauſes above enumerated, or torpor (196.) either of the whole body, or of a ſingle part (155, 159, 175, 197.), theſe evils (203.) are more eaſily produced.

205. The firſt three of theſe affections (203. 123.) are not ſo diſagreeable to nature, but that they may obtain in a moderate degree, and be eaſily endured in the ſound ſtate; nay, they are even neceſſary for ſeveral offices of life, as will readily appear to any one conſidering the various mutations which the

parts undergo by age, and the functions impoſed upon the more delicate ſex. Hence, they are only to be accounted morbid when they exceed meaſure, or happen in an incongruous manner with regard to order, time, matter, or parts.

206. It is likewiſe to be remarked, that theſe four vitiations (203. I. to IV.) differ from each other principally in degree; and that any one of the latter can ariſe from the former previouſly induced, dilatation changing into an anaſtomoſis when it extends to the orifices of the ducts; anaſtomoſis when increaſed into diapedeſis; and finally, this laſt into diæreſis. To know this is exceedingly uſeful, that the approaching evil may be remedied in time; ſeeing the firſt ſpecies often admit of an eaſy cure, which is not the caſe when there is a ſolution of unity.

207. Beſides, there are various effects which thence enſue; which being duly conſidered, and applied to different parts of the body, point out the nature of many important diſeaſes.

Dilatation ſometimes produces tumours, and thoſe of a prodigious ſize, if the coats that are conſiderably elaſtic, have been long ſubjected to a gradual diſtending force. Nature likewiſe, leſt they, when extenuated, may be ruptured, takes care to ſtrengthen the ſides of the cavities, by giving greater condenſity, by incraſſation, and the addition of new lamina. Hence the various deviations from the ſound ſtate in point of conformation, which deceive ſuperficial obſervers. A diſtenſion more violent in degree occaſions ruptures, from which there is an effuſion of the contents, and innumerable evils which, in conſequence thereof, ſucceed.

A greater load of matter forced into the diſtended cavity from the interrupted paſſage, augmented heat, putrefaction excited, and the influx of the vital principle, into the veſſels of the coats and neighbouring parts, intercepted by the force of preſſure, cauſes a mortification. If a thinner part of the matter tranſudes through ſome ſtrait outlet, or ſuch an aperture as happens in diapedeſis, the groſſer part is retained; which, being at length condenſed, forms tumours of a different feel.

Anaſtomoſis, ariſing from a protracted dilatation (206.), ſometimes ſuddenly diſcharges the matter that has been accumulated and retained, which is attended with a fatal event. From the entrance of heterogeneous matter by the enlarged orifices of the ducts, aberrations, obſtructions, ecchymoſes, alienations of the ſecretions and excretions, and various tumours, have their riſe. Nor are they unlike to theſe, which, ſooner or later, a ſupervening diapedeſis or diæreſis produces. But when the fibres of the body, which have been long and powerfully diſtended, loſe their elaſticity, and in that ſtate become rigid; we need not be ſurpriſed, that the miſchiefs ariſing from this ſource are ſeldom of any continuance; but nevertheleſs become incurable, although the diſtending force is removed.

208. There is, however, in theſe diſeaſes, ſome effort of the medicative power, which nature exerts for the health of the body, when the injuring matter ought to be ſeparated and diſcharged from the maſs. Upon this critical evacuations and metaſtaſes chiefly depend.

209. There is another ſort of morbid affections of the veſſels or cavities, which preſents to our con-

ſideration the diſeaſes of ſtraitneſs; to know the different ſpecies of which, according to the different manner in which they happen, is neceſſary.

I. Obſtruction, Ἔμφραξις, denotes a cavity filled up with a congeſtion of groſſer matter, in ſuch a manner that it cannot paſs, and ſo becomes impervious. For this reaſon, it is not the coats which are in fault, but the matters contained in them. Theſe can offend in different ways. The fluid may be pure, and of due conſiſtence; but is forced from its proper courſe into the dilated orifices of ducts, which were intended by nature for tranſmitting a fluid of greater tenuity, which may happen by anaſtomoſis (207.). The indigenous matter may corrupt, or become too glutinous, the mucous, phlogiſtic, and oily parts, may turn feculent, empyreumic, earthy, grumous, purulent, &c. Some extraneous matter, ſuch as calculus, gypſum, worms, and the like, either morbidly generated in the body, entering by ingeſtion, or applied externally, blocking up the cavities and orifices of the ducts, neither paſs forwards themſelves, nor ſuffer thoſe things to be tranſmitted which ought. To this place may be referred volvulus, or the reception of one part within another, &c. of which we ſhall treat anon.

II. Obſtipation, ϛενοχωρια, a ſtraitneſs of the paſſage, which happens when the coats are everywhere equally increaſed in thickneſs, or ſome prominent knob diminiſhes or obliterates the cavity. To this tend accumulations of fluids in the veſſels of the membranes, grumous coagulations, exoſtoſis, calculous concretions, emphyſema, inflammatory and purulent tumours, ſarcoma, ſcirrhus, &c.

generated in the texture of the coats, if they inwardly depend.

III. Compreſſion, when any external force preſſing the yielding ſides of the cavities inwards, and gradually leſſening their diameters, at length wholly takes away the vacuity, by bringing the coats into mutual contact internally. Tumours, fractures, luxations, ligatures, or any diſtorting, compreſſing, or contuſing violence, may be the means of producing this diſorder.

IV. Collapſe, Συνίζησις, when the ſides of the cavities not being expanded, through a defect of the contained matter, mutually approach. It therefore ſuppoſes, that either nature, a protracted diſtenſion beyond the due tone, or ſome other cauſe has rendered the coats weak and flaccid, or that there has been a ſudden depletion, as they cannot maintain a vacuum by their own ſtrength, when deprived of their natural ſupport, which, by a new influx, however, they might have eaſily recovered, if compreſſion (III.) or concretion had not ſupervened the ſubſidency.

V. Contraction is likewiſe to be referred thither, when the coats, by the innate contractility of their own fibres, ſtraiten or block up the cavities or their orifices. That may happen either ſlow and gradually, or with vehemence and ſuddenneſs. There is, moreover, in every ſolid, which forms the coats of any cavity, a power of coherence (139. *et ſeq.* 150.), which, as it prevents the ſeparation of elements, ſo it conſtantly tends to render the contact nearer. There is likewiſe in many an elaſtic power of different degrees. There alſo concurs the vital power (170, 175.). Nor are thoſe there wanting in which a muſcular power aſſiſts; if it may be allowable to diſtinguiſh it from the former. By theſe internal powers, the coats extrinſically protect themſelves againſt the force of the contents, and reſiſt diſtenſion and rupture. So that the oppoſite efforts of the containing parts and the contents reciprocally antagonize; by which means, the diameters of the ducts are limited, or will be greater or leſs, if either of the two impulſes have receded from their proper equilibrium. Hence we underſtand the origin and differences of ſlow and ſudden contraction. But if the power of coheſion and renitency are beyond meaſure increaſed, and the bulk, weight, volumen, and motion of the contained matter, not proportionably ſo, or, *vice verſa*, the latter diminiſhed, and the force of contraction not in like manner, according to the nature of this, the coats ſlowly and gradually approximate, and, by the ſhrinking of the fibres, ſtraiten the cavity, until they come to an equipoiſe with the contents; or theſe being expelled, or become deficient, they attain the greateſt contraction of which they are capable. Moreover, the vital and muſcular powers, when irritated, act with greater vehemence, and ſuddenly conceive ſpaſms (195.) upon the application of various ſtimuli (171.), not even ceaſing when they come to an equilibrity with the contents; by which the coats, being made rigid, do not admit of the proper dilatation, and not only greatly ſtraiten the cavity, but cloſe it up altogether. This points out how various cauſes may induce that vitiation in either way; and that, when the preceding contraction enſues upon a diminiſhed diſtenſion, or one too much increaſed, as, by irritation, the latter circumſtance can take place, both of them, however, are not ſo different, but that they may be produced together in the ſame manner, or the one may ſupervene the other.

VI. Coalition, Συμφυσις, ſuppoſes an obliterated cavity, becauſe of the coats, of which it is formed, being conſolidated. This kind of affection is induced by the formation of a cicatrix or callus, which happens after a ſolution of continuity, by compreſſion (III.), collapſe (IV.), or by long continued or violent contraction, as concretion at laſt ſucceeds, from the ſides being long in contact internally. The ſame thing may likewiſe be effected by obſtipation (II.). Sometimes the obſtructing matter (I.) conſolidating coaleſces with the internal ſurface of the coats. From whence it is evident, that every ſpecies of anguſtation at laſt terminates in ſymphyſis; at which when it is arrived, all attempts to cure it are in vain, unleſs that can be effected by operation.

210. But as it not unfrequently happens, that ſeveral of the ſpecies enumerated (209.) concur; ſo this latter vitiation is often the concomitant (203.), and the inequality of the diameter of the ſame cavity may prove an obſtruction to the tranſfluent matter.

211. From hence are eaſily underſtood the innumerable evils which may be derived from this ſource upon the animal oeconomy; ſeeing it relates to all the cavities, the greateſt equally with the leaſt. And, upon the due proportion of theſe to their contents, almoſt all the functions of any parts whatſoever, more or leſs, depend. A frequent complication, with a morbid redundance (210.), likewiſe

increaſes and aggravates the miſchiefs thence ariſing.

Organic Diſeaſes of the Solids.

212. The human body in its ſolid parts, which are known by the aſſiſtance of the ſenſes, is a ſyſtem of organs very different, which, when they are according to nature, all of them delight in their own limited number, magnitude, conformation, proportion, ſituation, connection, and extenſion, as we learn from anatomy. Phyſiology likewiſe demonſtrates, that, by the ſtrength of this fabric, every ſingle part is fitted for effecting that end which health requires; and all of them differently, as it is requiſite the function of a different organ ſhould.

213. Therefore the change of theſe conditions (212.), or their deviation from the natural ſtate, can impede the functions that are ſound, although others are entire; hence ariſe the organic diſeaſes, of important conſideration, which now come to be treated of in their due order.

214. But it is to be remarked, that not all the vitiations that occur, although they may deviate from the order of nature, do impede the functions in ſuch a manner as to deſerve to be reckoned among diſeaſes (38.); for many of them, in a ſtricter ſenſe, rather belong to the claſs of ſymptoms; ſeeing they may bear a reſemblance to theſe which flow from other diſeaſes (86.): Finally, many of them are compound affections of the fluids and ſolids, as even the organic parts themſelves conſtant-

ly partake of both. Neither Phyſiology nor Pathology, however, can ſeparate this connection.

215. As the chief property of ſimilar parts (150.) is coheſion, ſo likewiſe is it of diſſimilar. Upon this depend firmneſs, continuity, and the fitneſs for other mechanical properties. When this, therefore, is vitiated, it induces diſeaſes, and theſe different, as they may either belong to the ſubſtance of the part conſidered ſeparately, or to its connection with others in vicinity.

216. The firſt genus relates to the ſeparation of parts, under which the following ſpecies are comprehended.

217. Fracture, which is a ſolution of continuity in a hard, bony, cartilaginous part, occaſioned by mechanical cauſes. This, in a more extenſive ſenſe, comprehends fiſſure, Ἕδρη, diviſion, laceration, &c. It is produced from the injury ariſing from any cutting, pricking, concutiating, or contuſing force of a ſubſtance of greater coheſion than the bones; and is produced from ſo much the ſlighter cauſes, as the bones are become brittler by old age, hard froſt, lues venerea, gout, rickets, caries, or any other diſeaſe (161. IV. 162, 165. III.), ſo as to be ſometimes fractured, even without any external violence, but by the action of the muſcles alone upon the bones to which they are attached. The various evils which are the conſequence of theſe are eaſily known, as well from the different uſes for which the bones ought to ſerve in the animal œconomy, which they cannot, unleſs when intire; as from the diſorder, irritation, diſtenſion, preſſure, and laceration, which they muſt neceſſarily inflict upon the neighbouring parts.

218. Wound, which ſignifies a recent ſeparation in a ſolid part, not hard, made by mechanical force, ſo that the blood iſſues from the veſſels. They are occaſioned by the ſame cauſes as fractures; and, from the diverſity of the parts which they injure, and the manner how, have many diſtinctions, and various names; ſuch as inciſions, cuts, ruptures, fiſſures, contuſions, &c. ſo that whatever ſound functions depend upon the integrity of the parts, and the fluids properly contained within them, and the motion of theſe in their proper veſſels, muſt neceſſarily be rendered morbid by a wound. Hence ariſe diſorders infinite in number and variety. There likewiſe accede the ſalutary operations of nature which diſpoſe wounds to heal.

219. To this place belong dry ſolutions of continuity, the opened ſides of which, the epidermis, callus, or cicatrix, cover ſo, that the fluids do not iſſue from the extremities of the veſſels, nor can the ſeparated parts coaleſce, although brought into contact. To this head belong fiſſures of the palpebræ, lips, tongue, auriculæ, &c. Neither are the hard parts themſelves free from this defect, which are ſometimes congenite, and ſometimes contracted from the cure of a wound, ulcer, fracture, caries, &c.

220. The laſt genus (215.) comprehends vitiations with regard to connection, which pervert the motion or firmneſs of the parts; and, for the moſt part, are not borne with impunity. They may be in fault by exceſs or deficiency.

221. Exceſs in connection is ſaid to be preſent, when the parts, which ought to be ſeparate, are grown together, or there is a ſtricter coheſion than ſhould be, when a looſer is requiſite. Thither may

be referred ſymphyſis of the ducts, or their orifices, Ατρητοι, *i. e.* imperforations of the fundament, genital parts, urethra, meatus auditorius, noſtrils, &c. when the fingers, lips, muſcles, tendons, and veſſels adhere to one another, or to the neighbouring parts, their functions are impeded: Which affections may be preſent from birth, or occaſioned by other diſeaſes (209. VI.).

222. There is another remarkable vitiation chiefly affecting the joints, which was called by the ancients 'Αγκυλη, anchyloſis, when the joints were ſo ſtiff as to be without motion. It therefore ſuppoſes a morbid affection of the parts which help to form and preſerve the articulation, which may ſupervene upon the joints from various occaſional cauſes, ſuch as fracture, luxation, wounds, contuſion, abſceſs, ulcers, &c.; if the ligaments, from ſome cauſe, are violated, contracted, become rigid, or coaleſce with the internal parts; ſometimes a deficiency of the lubricating fat occaſions dryneſs, ſometimes its redundance or inſpiſſation, or an extraneous fluid poured into the cavity of the joints, induces tumour. It likewiſe happens, that the extremities of the bones connected are enlarged from rickets, the callus of a fracture near the articulation of the bones, exoſtoſis, or fungus, may grow internally, or that a fiſtulous ulcer, or caries, perverts the firmneſs, coheſion, ſize, or figure of the parts, &c. It is ſeldom that any one of theſe affections remains for a time, but the other ſucceeds; hence the evil becomes incurable.

223. To this genus likewiſe belong anchylogloſis, and anchyloblepharos; the former denotes an aſtriction of the tongue, by which the motions neceſſary for ſucking, deglutition, and ſpeech, are

impeded, on account of the frenum, from the time of birth, being harder or more contracted than it ſhould be, too far extended upon the point of the tongue, or a cicatrix, wound, or ulcer remaining under it; the latter ſignifies a ſimilar affection of the palpebræ, by which they may adhere to each other, to the adnata or cornea, in ſuch a manner that they cannot be opened, ſo conſtantly obſtruct the ſight. It may ariſe from the interpoſition of ſome agglutinating matter, or from a cicatrix not properly induced.

224. Connexion is deficient (220.), if the parts which ought to cohere are ſeparate, or are more looſely joined to each other, which would require them to be cloſer. To this head belong the ſeparation of cartilages and epiphyſis from bones. The diſeaſes which hold a middle ſtate betwixt fracture and luxation, are looſeneſs of the teeth, weakneſs of the joints, on account of the greater flaccidity of the ligaments, and a laxer adherence of the tongue; hence too much mobility, &c.

225. The bones have a certain poſition and direction, with reſpect to each other, agreeable to nature, which alone being perverted, the functions cannot be perfect; although other parts are intire. From whence there ariſes a new claſs of diſeaſes, which, notwithſtanding they may be oftener complicated with the defects of coheſion (215.), deſerve, however, to be conſidered ſeparately, according to the diverſity of the ſpecies into which they divide. Thither are referred luxation, hernia, prolapſe, aberration.

226. It is called luxation, when the bones, where they articulated, depart from their natural ſituation. They are joined by articulation, either of manifeſt

or obſcure motion, or by juncture, and are connected ſo as not to have a different motion, but as if they were intire and of one piece. The latter was by the ancients called συμφυσις; the former, αρθρον. According to this diverſity, therefore, luxation is likewiſe diſtinguiſhed into two ſpecies.

227. Εξαρθρημα, de-articulation, or luxation, properly ſo called, is a departure of the joint from its proper place into another, by which motion is perverted. A ſlighter degree of this vitiation is ſubluxation, παραθρημα, when a part of the bone only ſlides out without the brims of its ſocket; to this is referred diſtortion, if it diſorder the ſituation of the bones. Theſe evils may be induced by various external means, bending and diſtorting in a greater degree than the nature of the joint can admit. Sometimes a congeſtion of mucus, pus, or ſome other humour, or an exuberance of parts, gradually preſſes the bone out of its place. Whatever tends to weaken the parts which preſerve articulation, favours the effects of violence. Hence feebleneſs, or a ſolution of continuity of the ligaments, muſcles, and tendons, various vitiations of the proceſſes in vicinity, and of the bones themſelves which are in oppoſition, of the interpoſed cartilages, and of the ſoft parts lying internally; ſuch as tumours, bad conformation, relaxations, ulcers, caries, fracture, contuſions, &c. all diſpoſe to this effect; the articulation is even ſometimes looſed by the action of the muſcles alone which move the joint. From whence come the different complications of luxation, with other diſeaſes.

228. Seeing there is in the συνταξις, or articulation of the bones, ſo great a variety, that there is not one joint ſo like to another as not to have ſome-

thing different, neither has nature endowed all of them with equal ſtrength; and the luxation of them is eaſier or more difficult in different parts;—it behoves every one who would make a proper judgment concerning the ſame, not only to know the figure and poſition of all the bones particularly, but alſo what things are common to all articulations, and proper to each; as ligaments, cartilages, glands, muſcles, tendons, aphopyſis, epiphyſis, as well cartilaginous as bony, and the various changes of theſe at different periods of life; likewiſe the veſſels, nerves, and viſcera which lie adjacent. Nor can the innumerable evils which happen from theſe luxations be otherwiſe underſtood.

229. There is another ſpecies of perverted ſituation of bones, which happens when thoſe which are connected without articulation continue ſeparate (226.). This ſpecies does not require a particular name, and may partly be referred to the head of vitiated connection (224.), in thoſe bones at leaſt which ſome interpoſed ſubſtance connects. But it will be underſtood from what has been already ſaid (227. 228.).

230. Hernia (225.) is ſaid to be preſent, when there is a leſion of a ſound function; becauſe a ſoft part lying internally, departing from its natural ſeat, is morbidly received into the cavity of another ſoft part. This generical term, although it comprehends a number of ſpecies under it, is, however, improperly applied to various tumours which they call ſpurious hernia; and the more, becauſe they happen in thoſe places in which the true hernia are moſt frequent; which, notwithſtanding, in their nature and origin, are exceedingly different, therefore can with no propriety be referred thither.

231. The hernias which are moſt frequent and remarkable, are of the parts which are contained in the abdomen. The great ſoftneſs, for the moſt part, of the inveſting coats give occaſion to theſe. The nature of the peritonæum which lines it internally, of great tenacity indeed, but admitting of vaſt diſtenſion; the great bulk, laxity, and mobility of the viſcera, conſtantly varying in dimenſions according to the different quantities of the contents, not having any fixed ſeat in their whole extent; hence agitation, by the force of reſpiration, and other motions of the body, conſtant preſſure, more or leſs in degree, but not alike equal in every part, conſequently, almoſt a continual endeavour to break through the containing coats, and if there is any opening, to dilate it. The membrane of the peritonæum can reſiſt this in proportion as it is ſupported externally by bones, muſcles, apaneuroſis, and other teguments covering and ſuſtaining it. So that when there is an equilibrium betwixt the powers oppoſed to each other, the bowels neither can break through, nor the peritonæum too much give way. But if, in any part, it is deprived of its external ſupport, or if the force of the contents is directed unequally, they violently puſh through at the part which is leaſt fitted to reſiſt; at the ſame place likewiſe, the peritonæum, yielding, is dilated into a depending cavity, or what is very rare, is ruptured; and in either caſe the internal parts, which are neareſt, and are moveable, are ſuffered to deſcend, and go out without the circumference of the abdomen, below the common teguments, the tumour ſtill increaſing, if the ſame cauſes have continued. This is a general idea of the hernias, which

have their ſeat in the abdomen, whence it is eaſy to underſtand their differences.

232. If the umbilicus cut after birth, and cloſed up by a cicatrix, adheres leſs firmly to the tendinous circle, through which formerly the umbilical veſſels paſſed, that part of the peritonæum which lies under, and placed in the center of motion of the abdomen, not being properly ſupported, and puſhed as well by the adjacent omentum as the inteſtine, protrudes forwards, and, raiſing the ſkin and umbilicus itſelf, forms a ſack into which the parts within are morbidly received. By this means a tumour is produced, which is commonly denominated exomphalos, εξομφαλος παθος, or omphalocele, an umbilical hernia; a diſeaſe not unfrequent among infants, and women from pregnancy, or a difficult birth.

233. In each groin, a chord of veſſels covered by the cellular texture emerging from under the peritonæum, deſcends through the ring, or more properly the tendinous arch of the external and internal oblique muſcles of the abdomen upon the os pubis, and is carried into the teſtes in men, and in women to the labia pudenda, improperly called the *ligamentum rotundum uteri*; at which place, the membrane of the peritonæum more thinly covered than elſewhere, and leaſt ſupported externally, is moſt frequently ſubject to hernia. But if that arched foramen is from ſome cauſe dilated, and the peritonæum, preſſed and diſtended by the contents, deſcends through it, together with the neigbouring parts, the omentum, inteſtine, &c. producing a tumour at the groin, it is called *hernia inguinalis*, or Βȣζωνοκηλη. If ſooner or later it extends to the inferior parts in men, the ſcrotum being diſtended,

ed, it is called *hernia ſcrotalis*, ’Οσχεόκηλη; but in women, when falling down to the *labia pudendi*, it does not obtain a particular name. The latter caſe, however, in either ſex, is, by ſome, called compleat, the former incompleat, inguinal hernia. This diſeaſe happens to infants, eſpecially of the male ſex. Sometimes they are born with it; at other times it ariſes from no evident cauſe, as we know from obſervation. But the way in which it happens is underſtood from the conformation and evolution of parts which obtains at that age.

234. Moreover, towards the external ſide of the groin, very near under which is the articulation of the femoris with the coxendix or iſchium, the like diſeaſe ſometimes happens, to which the moderns have given the name of *hernia cruralis*, *femoralis*, *inguinalis externa*, μηροκηλη. In that place, the crural veſſels, covered with cellular texture, go out from the abdomen, by the *ſinus* of the *os ilium*, under the apaneuroſis of the external and internal oblique muſcles, condenſed into the appearance of a ligament, which is called the ligament of Fallopius or Poupartius, and deſcend to the lower extremities. That ligament, therefore, if, from any cauſe, it is ſtretched or relaxed, the peritonæum, more weak in this part, yields, is diſtended, and dilated into a cavity, which receives into it the omentum and inteſtine; and deſcending with theſe along the courſe of the fore-mentioned veſſels, it raiſes the common teguments into a tumor. The female ſex are more ſubject to this diſeaſe than the men.

235. In theſe places (232. 234.), the belly is ſo formed by nature, as to have but little power to reſiſt. It is, therefore, no wonder that hernias very frequently happen there, if any violent effort of

the body, holding in of the breath, a fall from a high place, violent dancing, a ſtroke upon the abdomen, powerful ſuccuſſion, &c. the belly being, at the ſame time, much diſtended with meat, drink, the fœtus, air, or water, or compreſſed externally with ſwaddlings, ſtomachers, and ſtrait cloaths, have given occaſion. Perſons, however, are more liable to theſe diſeaſes in proportion as they are feeble, lax, moiſt, corpulent, from age or temperament, or debilitated with diſeaſe; to this the immoderate uſe of milk, oil, butter, fat meats, and the warm bath give a prediſpoſition.

236. There is another kind of hernia, more rare, but ought not, however, to be omitted, called *ventral hernia*, which may happen in any part of the abdomen whatſoever, as often as the membrane of the peritonæum, deprived of its ſupport, and weakened on account of the muſcles, eſpecially that named tranſverſe, with which it is immediately covered, being cut, ruptured, or eroded, breaks through and is diſtended; or itſelf ſuffering rupture cannot reſtrain the contents from paſſing out. It is, therefore, wont to happen through the whole of the belly, if any part of it has been debilitated by a wound, contuſion, abſceſs, ſinus, recent cicatrix, diſtenſion, or is preſſed upon with too great a force (235.)

237. To this place may be referred the hernias, which have been remarked from obſervation, ſuch as lumbar, dorſal, and thoſe which appear at the great foramen of the coxendix, and at the peritonæum; likewiſe thoſe which are ſo produced in different parts internally, as not to form any external tumour, and others perhaps which may hereafter be found in practice. We are taught, from obſer-

vation, that, the diaphragm being relaxed, the contents of the abdomen in vicinity can be forced upwards into the thorax.

238. But as the abdominal hernia differ in their ſeat, ſo do they differ no leſs with regard to the parts falling out. Hence they have obtained various denominations. They very frequently include the omentum, or inteſtine, or both, and are called epiplocele, enterocele, entero-epiplocele. Sometimes the ſtomach is contained in the ſack, which may be called graſtrocele. At other times, a part of the *veſica urinaria* protrudes at the groin in men, even as far as the ſcrotum. In women likewiſe, when preſſed in pregnancy, it deſcends, and, ſwelled with the urine, appears prominent between the womb and the anus. This ſpecies of hernia, cyſtocele, is, for the moſt part, complicated with a *prolapſus uteri*, nor is the uterus itſelf ſaid to be free from this diſeaſe, which is called hyſtrocele. In like manner it happens in other parts.

239. It is of uſe to know, that the inteſtine ſometimes falls into the depending cavity, not in its whole circumference, but ſome part of the coat only is received into the herniary ſack; this diſeaſe is complicated with that of dilatation (203. I.), and a perverted ſituation. That circumſtance itſelf can both happen to the *veſica urinaria*, and perhaps to the womb, from ſome defect, either congenite, or afterwards contracted.

240. The impediments that may ariſe to the functions from theſe diſeaſes (232. to 240.) are innumerable, and, according to the diverſity of the parts that are removed, may be exceedingly different, but eſpecially dangerous, when the mouth of the ſack is ſo ſtrait as not only to prevent the reduction

tion of the part, but, at the ſame time, induces upon it the diſeaſe of coarctation (209. III.), by which, both the paſſage is obſtructed, and the circulation of the humours through the veſſels ſuppreſſed. Hence, beſides other very afflicting evils, inflammation is produced, which, for the moſt part, terminates in gangrene.

241. There are likewiſe inſtances of encephalocele, in very young children, where ſome part of the encephalos has protruded through the bregma, and formed a tumor under the teguments. The great ſoftneſs, inequality, or incompleteneſs of the bones of the cranium, hydrocephalus, violent and unequal preſſure of the uterus, or a more difficult delivery, may be the cauſe.

242. Gloſſocele, hernia of the tongue, ſo called, when the tongue, having a greater extent of motion within the fauces, in the act of deglutition, is forced into the mouth of the pharynx, and, remaining in an unnatural ſituation, ſometimes hinders the paſſage of the air, not without immediate hazard of life. The too great mobility (224.) of the tongue, in new born children, on account of a ſhorter frenum, or immoderately cut without neceſſity, occaſions this diſorder, when they attempt to ſuck. There are likewiſe related diſeaſes of the eye, under the name of ophthalmocele, to be referred thither. When the uvea comes forward upon the relaxed cornea, that ſpecies of ſtaphyloma belongs to hernia; likewiſe, when the ſeat of the chryſtalline lens, forced through the pupil, is obſerved to be behind the cornea.

243. Moreover, the muſcles, and particularly their tendons, if changing their ſituation, on account of a rupture of the ligaments, by which

they are held, enſuing, for the moſt part, upon a violent ſpaſm, morbidly undergo a change of place, likewiſe belong to this head.

244. There is another kind of hernia, when a part is received within itſelf, and remains fixed within its own cavity; for which reaſon its function is diſordered: Which kind of diſeaſe called *volvulus*, or *intus ſuſceptio*, does not appear in any other place but the inteſtines, when ſome ſtraiter portion of the inteſtinal tube, forced into a wider, is included within it.

245. A lax mobility of the inteſtines, great ſenſibility, dilatation from the contents, and next a contraction from ſpaſm, frequently occaſion this diſeaſe, if any violent commotion, vomiting, irritation from acrids, or inflammatory things, lumbrici, &c. have occurred. Neither are the ſlender parts alone liable to it, but even the groſs.

246. Suſception can happen either upwards or downwards, and may vary in length, or be in one part or more. Sometimes it is complete and intire, when the tube, in its whole circuit, together with that part of the meſentery belonging to it, enters in. Sometimes it is incomplete, and leſs in degree, when a part of the circumference only, eſpecially that more remote from the meſentery, is turned inwards.

247. This obſtinate diſeaſe, producing obſtruction of the inteſtinal tube, can diſorder the whole function of the *primæ viæ*; alſo, when occaſioning ilius, can induce ſudden death. Often, however, it is borne without hurt, if ſpaſm, inflammation, or impediment to the matter paſſing through it, is abſent.

248. Prolapſe, προπτωσις (225.), differs from hernia in this ; it ſuppoſes a ſoft part lying internally removed from its ſeat, ſo as to appear externally through ſome natural aperture, or one cauſed by diſeaſe. Hence it is evident, that not all the kinds of prolapſes, commonly ſo called, can be comprehended under this head.

249. Prolapſus ani is properly referred thither, when the extremity of the inteſtinal tube, denominated *rectum*, relaxed and inverted, deſcends below the fundament like a bag, from which enſues pain, inflammation, gangrene, beſides other evils, eſpecially if the part falling down is ſtrongly compreſſed by the ſphincter ani. Whatever either weakens the inteſtine itſelf, or its firm connection with the neighbouring parts, produces this diſeaſe, ſuch as diarrhœa of long continuance, dyſentery, teneſmus, the frequent uſe of acrid purgatives, hard and dry fæces, which cannot be extruded without great ſtraining ; hæmorrhoides, aſcarides, wounds of the levatores ani, &c. The inteſtine debilitated by all theſe cauſes, cannot bear the ſmalleſt preſſure, without falling down whenever the ſphincter is relaxed.

250. Prolapſus uteri, is when the uterus in women ſuffers a vitiation like to the former (249.), which, falling down by the vagina, depends outwardly, and can either be inverted or not inverted.

251. It is called a prolapſus uteri inverted, when its fundus or bottom falls down below the os internum dilated, and, deſcending by the vagina, depends in a globular form from the privy parts. The degrees of this evil are different, until it comes to the higheſt, when the whole uterus falling out makes

a tumor, which includes the bladder adhering to it. This affection is liable to ſucceed upon delivery, if the ſecundines are too violently extracted, while the os internum is ſtill dilated, and the body of the uterus not contracted. It ſometimes, however, happens to virgins and women never bearing children, in a progreſſive way, by reaſon of the marcid ſtate of the uterus at an advanced age, much fat or other ſubſtances accumulated within the belly, forcing it downwards. The great injuries which the functions may ſuffer from this diſeaſe, are obvious to every one. If the part prolapſed is ſqueezed by the contraction of the os internum, inflammation, gangrene, and ſudden death is induced.

252. But if the ligaments which keep the uterus in its place, the parts connecting it to the vagina, and others in vicinity, are relaxed, the whole of the uterus deſcends with the os internum undermoſt, and forms a tumor externally, which diſcovers the os internum.—This prolapſus uteri not inverted (250.), is more or leſs troubleſome to virgins and married women; ſometimes it is congenite, and has been falſely referred to the conformation of a doubtful ſex. It is produced from every cauſe, by which either the whole body, or the genital parts in particular, are rendered lax. Whence it is apt to ſupervene upon the abuſe of hot things, long continued fluor albus, a laborious birth, a neglect of the proper poſture after birth. The uterus likewiſe hardened and exceſſively weighty, the reſiſting ſtrength of the vagina being removed, makes way for its own deſcent.

253. A prolapſe of the vagina eſpecially is moſt frequent, which happens in a twofold manner. Either it is relaxed in its whole extent and circumference,

ference, and depends like a bag in different degrees of length from the pudenda: Or only ſome part of its coat relaxed deſcends, which not being timeouſly reduced, and fretted by the air, preſſure, and friction, ſometimes gathers into a vaſt tumor, having the appearance of a ſarcoma, and impoſes upon the incautious for a prolapſus uteri. This diſeaſe may ariſe from the ſame cauſes as the former, or from the rude handling of the privities, and is attended with many troubleſome conſequences.

But it will be eaſily perceived, that the different ſpecies of prolapſes enumerated (250. to 253.), may be, in different ways, complicated with one another; and that the one may enſue upon the other.

254. The eye ſuffers proptoſis, by ſome called ecpieſmos, when diſtended by inflammation, hydropthalmia, or ſome other cauſe, or preſſed by a tumor generated within the orbit, it is forced entirely from its ſituation directly forward, or to one ſide, ſo as not to be confined within the palpebræ. In like manner, the tongue is protruded from the mouth.

255. Beſides, many of the internal parts, as encephalon, lungs, omentum, inteſtines, ſpleen, &c. by means of wounds and ulcers penetrating into the cavities, can protrude externally. To this head belongs prolapſe of the uvea of the eye, when its coats are puſhed through an aperture of the cornea ruptured, eroded, or cut, and forms a tubercle, denominated ſtaphyloma, myocephalon, μηλος, ἧλος; from its likeneſs to theſe.

256. *Laſtly*, There are aberrations (225.), of different kinds, which happen in the ſoft parts in ſuch a manner, that they can neither be brought under the head of hernias nor prolapſes; they are

not, however, leſs remarkable, as they very often pervert the functions of health. A diſordered ſituation of the viſcera, knots and contortions of the inteſtines, a retention of the teſticles within the abdomen, obliquity of the mouth of the uterus, &c. belong to this place. Should not incongruous placing of the fœtus at birth, and extra-uterine conceptions, be referred likewiſe thither?

257. Nevertheleſs, it muſt be confeſſed, that many irregularities occur, of ſuch a ſort as may ſeem extraordinary; which, however, by no means diſorder the oeconomy, and, therefore, do not deſerve to be ranked among diſeaſes (38.).

258. Moreover, the parts may morbidly exceed, or be deficient in point of number. Exceſs is ſeldom a diſeaſe, when it does not very much diſturb the functions, as a ſixth finger, a third teſticle, &c. But it does not belong to this place to treat of the things which are preternatural. Deficiency, however, is, for the moſt part, an impediment; hence it is to be ranked amongſt diſeaſes, if it happens of a ſingle organ, or to thoſe of which the body has two or more, but cannot perform its functions without the concurrence of both. But it is an indication of a weak mind, and a malevolent diſpoſition, to infer, that becauſe we can bear the loſs of ſome parts without inconvenience, that they were given us by nature without any uſe aſſigned.

259. Conformation, as it is primarily intended for uſe, and, in a ſecondary way, for beauty, ſo, when it deviates from the order of nature, ſometimes occaſions diſeaſes from the diſorder in the functions; at other times innocent deformities, which do not belong to the phyſician. Whoever deſires to make a proper judgment concerning theſe

vitiations, let him conſider, that the limits of dimenſion are not ſo exactly marked out, but a great variety may be borne without any prejudice to health; neither does the ſame thing ſeem beautiful, or deformed, to every individual perſon and nation.

260. Magnitude likewiſe ſuffers its own exceſſes and deficiencies to be reckoned among diſeaſes or deformities, which ought, however, to be more regarded when happening in ſingle parts than in the whole body. Health admits of a great variety in the human ſtature, and is not leſs perfect in the ſmalleſt dwarf, well proportioned, than in the greateſt giant. Nor can the difference of bulk, as it occurs at different periods of life, in the whole body, or in the parts of it, although it may render the functions imperfect, be reckoned morbid; ſeeing it is agreeable to the laws of nature, and may be comprehended in the latitude of health.

261. The moſt ſimple vitiation of exceſs in quantity is enormity, when a part increaſes to an immoderate ſize from the accretion of an exceſſive quantity of ſound matter, the conformation and ſubſtance being entire. It is owing, therefore, to an exceſs of nutrition, which is cauſed by a greater afflux of fluids to the part, a more difficult paſſage, inertneſs of the veſſels; hence an accumulation of the nutriment, and even a leſs detrition than uſual. But to this, beſides other cauſes, a defect of nutrition in other parts can contribute. There is, perhaps, from birth, a certain diſpoſition in the body favouring this over-growth.

262. The nature of tumours is more compound: For it ſuppoſes ſomething alienated, either in the ſolids or fluids of the part, ſuch as vitiations of the humours or ducts, or other organic diſeaſes, &c.

differently complicated; the effects of which not only increaſe the ſize of the part, but likewiſe preternaturally change the ſubſtance, figure, and other ſenſible qualities: Hence they cannot be underſtood in this place.

263. In like manner it happens with regard to a diminiſhed bulk, which either mutilation induces, by deſtroying part of the organ, or is produced from different vitiations of the nutritive juices, a defect of the ſame, or ſome cauſe diſſolving, corroding, or diſſipating the ſolid matter. It, therefore, attends various diſeaſes hereafter to be treated of.

264. Finally, the parts which do not ſeem to be really affected with the vitiation of increaſed magnitude, when compared with others, can ſo exceed, or be deficient, in reſpect of proportion (212.), as from that cauſe to produce in the body a greater tendency to certain diſeaſes; which, if it does not deſerve the name, at leaſt ought to be reckoned amongſt the ſeeds of diſeaſes, which ſometimes are preſent from birth, ſometimes are contracted through length of time, principally from affections of the bones. The conſtant diverſity of proportion which appears in age and ſex, is not only ſubſervient to beauty, but uſe.

Diſeaſes of the Fluids.

265. WE learn from chemiſtry, that the greateſt part of the human body conſiſts of fluids; ſo that theſe are not leſs requiſite for the functions of health than the firmer parts, as is eſtabliſhed in phyſiology.

266. Nor is it competent to the integrity of the functions, that any kind of fluid is contained in the

body, in any quantity, or in any place, indifferently, whether it move or ſtagnate, is retained or excreted: But all of theſe have their own ſtated manner aſſigned by nature, from which if they deviate, diſeaſe is induced.

267. Having, therefore, pointed out the vitiations that may occur in the ſolids, we next come to deliver in like order (122.) the doctrine of thoſe affections which may happen in the fluids. It is, indeed, to be acknowledged, that it was no great abſurdity in the ancients not to give a place to them amongſt the cauſes of diſeaſes; ſeeing they, when ſolitary, are for the moſt part ſuſtained without any injury to health; nor do they break out into diſeaſes until the ſolids are vitiated: The reaſons, however, offered (123. 124.) would ſeem to prevail.

268. The fluids of the human body may be conſidered by the pathologiſts in themſelves ſeparately, or comparatively to the firm parts, by which they are contained: In either way, a great number of vitiations occur, the former of which it may not be improper to call abſolute, the latter relative, and to divide diſtinct claſſes into their own genera. The order will appear in treating the ſubject.

Diſeaſes of Coheſion in the Humours.

269. It is common to all fluids to differ from ſolids; but they differ only in the coheſion of matter (150.), which they, in ſome meaſure, have, although ſmall in degree. No coheſion takes away the idea of a fluid as well as of a ſolid; when, on the other hand, it is increaſed, it changes a fluid into a ſolid. Regard is therefore to be paid

to this quality as the moſt ſimple, manifeſt, and univerſal.

270. The ſtrength of coheſion does not obtain equally the ſame, when natural, in all and each of the fluids of the body: Every one has its own degree, by which it is fitted for the uſes required. The ſcále of fluidity, therefore, as well as firmneſs (154. 155.), comprehends many degrees exceedingly different, whether we compare different fluids of the ſame body with each other, or conſider the ſame in different ages, ſex, temperament, manner of life, &c. The human body, when ſound, fabricates its own fluids, and fixes the due proportion. There are limits of that ſort both of the ſound and morbid (155. 156.).

271. A vitiated coheſion betwixt the particles of the fluids may happen in two ways, by an exceſs or defect of coheſion. The latter is called tenuity and reſolution, the former viſcidity and lentor. Either of theſe may prevail univerſally in the whole fluids, or in one in particular, injurious to the whole body, or a part of it only.

272. Whoever conſiders that nature hath not aſſigned, without ſome uſe, very different degrees of coheſion to the fluids of the body when ſound (266.), and theſe being increaſed or diminiſhed, that fluidity is proportionally ſo; according to the meaſure of which the motion of the humours is rendered more or leſs expedite; alſo their paſſage through the ducts, diviſion, mixture, abſterſion, accretion, &c.; and afterwards compares with theſe the various purpoſes they ought to ſerve, for the integrity of the human oeconomy,—will not be ignorant of the noxious effects of either evil (271.): So that any one may deſervedly wonder

how any controverſy ſhould have happened among phyſicians concerning the matter.

273. An idea of the conditions upon which the fluidity of our humours depend, will point out the nature of its vitiations.

274. All the fluids of the human body, which can be examined by the ſenſes, compoſed of different matters, are only in part fluid, another part being ſolid; the fluidity of the craſſamentum is owing to an interfluent vehicle, and the varied proportion of the one to the other conſtitutes the different degrees of fluidity, and varies the coheſion.

275. The fluid part is mere water (132. 133.), which being taken away, the reſt becomes inſpiſſated. Whence the greater the tenuity, or the groſſer any fluid is, there is a greater or leſs proportion of water.

276. The craſſamentum, made up of a threefold matter, a ſaline, inflammable, and earthy (134. to 137.) combined, and diffuſed in water, thereby hindered from concreting, in proportion to its ſpiſſitude, inviſcates a greater or leſs quantity of water.

277. The mutual proportion of the different parts (276.), which conſtitute the craſſamentum, likewiſe make a difference; the phlogiſtic and earthy part abounding, renders it more groſs.

278. There is likewiſe in the humours a mucous part, capable of being drawn out into filaments, like to the gum of vegetables, a portion of the craſſamentum leſs unctuous, bland by its peculiar texture, viſcous, at the ſame time bibulous and abſorbent of the water; which, by its tenacity, gives a lubricous fluor, and is the more viſcid in proportion as it abounds,

279. An uniform mixture of theſe materials (274. to 278.), joined with the due proportion, which motion and heat preſerves, gives the proper degree of conſiſtence to every fluid.

280. Does the ſpherical figure of the globules, which are obſerved by the microſcope, and admitting of the ſlighteſt contact, diſpoſe to a leſs firm coheſion?—There are many things which forbid us to draw ſuch a concluſion. We may obſerve globules of the blood to put on another form when preſſed, and not to cohere; neither do they certainly maintain their fluidity, unleſs when ſeparated by an interfluent medium.

Oil is, therefore, not more fluid, becauſe it collects into globules when mixed with any watery liquid.

But what kind of form the particles of a homogeneous fluid really have, or is requiſite they ſhould have, naturaliſts may determine; concerning the fluids of the human body, which it would ſeem neceſſary for a phyſician to know, is my buſineſs in this place to treat.

281. It is evident, from hence, that there are many things which ought to concur for producing fluidity in the humours of the body, and that the vitiations in this reſpect muſt conſequently divide into different ſpecies, which ought to be accurately diſtinguiſhed by the phyſician.

282. Spiſſitude (271.) ſometimes indicates a deficiency of water, by which means the particles of the craſſamentum being brought into cloſe contact, firmly cohere. The too ſparing uſe of drink, and undue increaſe of the lymphatic excretions, a diſſipation of the moiſture by motion or heat, &c. an abſorption or reſtagnation of the ſame when ſe-

parated from the craſſamentum, all tend to produce this evil.

283. There is likewiſe a ſluggiſh gluten generated in the fluids, when the mucous part (278.) of the craſſamentum is immoderately increaſed; this readily uniting with the water, can inviſcate a very great quantity; whence ariſes a ſpecies of viſcidity (282.) very different from the former, cauſed by glutinous aliments, and weaker coction, a languid circulation of the humours, ſuſpenſion of animal motion, cold, or a retention of mucous excrements.

284. The craſſamentum may abound with too great a proportion of earth (276.), in which reſides the greateſt power of coheſion (142.); hence there is produced the worſt kind of viſcidity, if a deficiency of water (281.), as is uſual, concurs. But this vitiation may differ according to the varied combination of the earth with the ſaline or oily ſubſtances. An inherent acor produces a ſtyptic concretion, by which even the aqueous juice itſelf turns ſolid. The earth, ſaturated with pinguidity, runs into a pitchy amurcoſity, which, like roſin, rejects the water, and cleaves to the ſides of the veſſels ſo tenaciouſly as ſcarcely to be ſeparated. Such ſubſtances as are earthy, hard, aſtringent, the unfermented farinacea, ſuch as are viſcid, pinguid, gelatinous, frigid, or ſoporific, which come under the denomination of meat, drink, medicines, and poiſon, when received by ingeſtion, contribute to produce it; to which, if the cauſes (282.) are joined which diſſipate the parts of greater tenuity, by which means thoſe that remain are rendered more groſs, ſo much ſooner, and more certainly, will that vitiation take place in the fluids.

285. The general effects of viſcidity are more obvious and eaſy to be diſtinguiſhed. The principal of theſe is a ſlower circulation of the humours through the veſſels, from which ariſe ſtagnation, obſtruction, infarction, impediments of the ſecretions, and various kinds of tumours.

286. Another vitiation of coherence, tenuity of the humours (267.), which ſuppoſes an exceſs of fluidity, is not leſs various, and muſt be explained in order, according to its differences.

287. The firſt, therefore, and moſt ſimple ſpecies may be called the aqueous, as it is cauſed by a redundance of water in the humours, by which the other conſtituent parts are too much ſeparated, and being diffuſed into too ſmall particles, too looſely cohering, are attenuated. It ariſes from the internal and external abuſes of watery things, eſpecially too hot; an inactive life in a moiſt air; debility (157.) and torpor (196.) of the ſolids; too copious evacuations; hence a languid circulation; diminution of animal heat; retention of a watery excrement. It alſo, in its turn, produces its own cauſes by weakening (162.) and rendering torpid (198.) the ſolids that are loaded with it; hence ariſe cold and phlegmatic tumours, and a lentor of all the functions.

288. The other ſpecies of tenuity is compound, and has an acrimony joined with the water, by the attenuating power of which, the earthy and unctuous part of the craſſamentum, diſunited, and by the watery vehicle more equally diſſolved and diluted, mixes more intimately with the latter, and is conſequently hindered from a mutual coherence. Beſides, there is an acrid part, of a ſaline nature, which readily uniting with the water, abſorbs it,

and with difficulty ſeparates. This diſſolution takes place from an acrimony very much varying, either from that native portion of it reſiding in the body, being too great in quantity, too much evolved, or corrupted; or from ſome extraneous acceſſion from meat, drink, medicines, poiſons, miaſmata, contagion, either received by ingeſtion, or external application, intentionally or unknowingly: Concerning which difference we ſhall hereafter treat in its proper place.

It will then likewiſe be evident, that the effects ariſing from thence are various, according to the diverſity of acrimony. In general, it is a thin fluid of a penetrating, corroſive nature, which eroding the veſſels, and eaſily eſcaping, occaſions hæmorrhages, diarrhœas, ptyaliſm, colliquitive ſweats and diſcharges by urine, cacochymies, ecchymoſis, effloreſcences, exanthemata, puſtules, and many diſorders in circulation, nutrition, the ſecretions and excretions.

Morbid Acrimonies of the Humours.

289. WHEN we conſider the fluids as they are in the body when ſound, it is evident, that they are not fitted by fluidity alone for anſwering the ends required; but that other properties are requiſite, which are either common to all, or proper to ſingle ones, by which they both differ from others that are not of the human body, and from one another.

290. The moſt common characteriſtic quality of our fluids is the bland, which is manifeſt in all of them, a very few only excepted. To this the vitiation of acrimony is directly oppoſite; and, as it is manifold,

fold, and may occur very frequently, and is in many ways hurtful, it merits a particular attention.

291. With regard to the acrimony which belongs to the human body, it is ſo called, in a general ſenſe, whatever, by its acrid, inciding, and corroſive quality, is able to diſſolve the coheſion of the ſolids, to affect with pain the parts endowed with ſenſation, and to ſtimulate to contraction thoſe that are animated with the vital power (170). One is mechanical; the other chemical; and the weaker action of this is, in ſome meaſure, underſtood from the more manifeſt powers of the former.

292. The ſtimulating, painful, and diſſolving power of mechanical acrimony, ſuppoſes a ſubſtance, 1*ſt*, of an acute angular form, that may render it penetrating, and may impreſs the whole of its action upon, at leaſt, the few parts of the body which it ſtrikes; 2*d*, a degree of hardneſs, comparatively ſuperior to that with which it makes a colliſion; 3*d*, a degree of motion neceſſary to make them collide.

293. Although the exceedingly ſubtile texture of chemical acrimony eludes the acuteneſs of our ſenſes, yet, on account of the ſimilitude of the effects, the ſame thing would ſeem to apply. And here the ideas of rigidity, ſharpneſs, and motion, preſent themſelves, but are to be taken in a limited ſenſe, and not uſed with more ſubtilty than truth. The fluor of this kind of acrimony is favourable to its action: So that rigidity is by no means to be attributed to the whole maſs, but only to ſome of its ſmalleſt particles. Neither can we exactly determine the figure of theſe, which is perhaps different in different acrimonies; nor is an angular form ſo abſolutely neceſſary, but that we can ſuppoſe it to be

of another. Finally, this ſort of acrimony does not depend for its motion upon other parts, but by virtue of its own nature excites it; it is, however, aſſiſted by the vital power (170.).

294. Wherefore it is evident, that only the laſt ſort of acrimony (293.) is only to be conſidered in this place; as it alone may ſo infect the fluids as to conſtitute a part of them.

295. But the different ſources of this will more conſpicuouſly appear, if we once underſtood the means by which nature endeavours to avoid them.

296. In the firſt place, what meats and drinks nature has allotted for aliment to mankind are ſuch as are mild and bland, and not abounding with any acrimony, in any ſenſible degree. This we may ſee in fruits, corn, pulſe, fiſh, water, &c. Luxury only has introduced acrid, aromatic, ſpiritous, ſaline, pungent, and heating things, as being grateful to the palate; and which are fraught with innumerable evils.

297. Beſides, the body is preſerved from admitting any thing of a heterogeneous nature, where there is a paſſage by pores and orifices, by the power of ſenſation, which is rouſed to action by the irritation of any acrimony impreſſed, the effect of which ſo conſtricts the paſſages, as to exclude the offending matter, or even to eject it when admitted, if it is not ſo diluted and blunted as to become mild.

298. But if, at any time, it has ſtolen in under ſuch diſguiſe, as ſoon as it is lodged in the body it aſſumes its own nature; the bland parts likewiſe, both by the excited action of the vital power, and other numerous deviations, may internally corrupt; even the ſaline portion of our fluids, which is na-

tural (136.), and to which acrimony is chiefly indebted, may be every where diffuſed; againſt this inevitable danger, the obvious remedy is a mixture of the bland and acrid parts, which readily unite; for a ſmaller quantity of the latter is, as it were, ſuffocated by a greater quantity of the former. But, if we examine the four conſtituent parts (275. 276.), we will find, that there is not the ſmalleſt particle of ſaline matter in the fluids, which is not blunted by earth, temperated by phlogiſton, and diluted with much water. There is, beſides, a ſoft mucus (278.) which diffuſes itſelf through all the parts, and is extremely fit for ſheathing acrimony and covering the ſolids. Nor is a mixture of an unctuous ſubſtance leſs proper for the ſame purpoſe. It is for this reaſon we are impelled by hunger and thirſt to take meat and drink. But the crude part which is in theſe, is not, in like manner, admitted into the internal parts of the body, unleſs by the minuteſt orifices, in very ſmall quantity, by very ſlow degrees, and, being maſtered by the native fluids, it is prevented from imparting its acrimony, with which, perhaps, it abounds. In fine, conſtant motion, aſſiſted by heat, facilitates and preſerves the equal mixture, and does not ſuffer the acrid to ſeparate from the bland.

299. But the body, not enough protected by theſe, is likewiſe provided with its own emunctoaries; by which, when any thing has been admitted or generated internally, which cannot be aſſimilated, the acrimony is eliminated before it has had time to hurt.

300. Has human nature the power of rendering acrid particles bland, by turning their angular ſhape into a ſpherical? It is not enough manifeſt,

that this plauſible notion, with regard to it, will equally apply to a ſolid and fluid acrimony. We are inclined to believe that it is effected rather by a chemical mixtion (298.), than by a mechanical rotundation.

301. From what has been advanced on this head, it is obvious, that the principal ſource of morbid acrimony is ſituated in the perpetual intercourſe which the living body has with various external things (6.). The air, meat, drink, medicines, poiſons, miaſmata and contagion, introduce different acrimonies into the fluids in various ways, eſpecially if it ſteals in under a mild form, is evolved by internal corruption, mixtion, ſeparation; or, if at the time it enters, the vital power is too torpid (297.), or is overcome by too great a force.

302. Acrimony is likewiſe generated, when the body, in a ſound ſtate, is not ſupplied with the neceſſary aliment, which takes place the ſooner, in proportion as the vital power is ſtronger; for it not only diſſipates the milder parts, but evolves and ſharpens the ſaline matter, ſo as to require a demulcent pabulum.

303. To this may be referred a too rapid circulation of the humours, to which an immoderate heat accedes: Neither of which can be long ſuſtained without a diſſipation of the water, and a concretion of the ſoft unctuous part with the ſalt.

304. Stagnation, in like manner, deſtroys the blandneſs of the fluids (298.) which ariſes from their uniform mixture. Hence ariſe depoſitories of acrimony in particular parts, which diffuſes its noxious effects elſewhere.

305. Nothing, however, ſo much favours the generation of acrimony as the irregularities of thoſe

operations, by which coctions, ſecretions, and excretions are effected. Hence crudity, and various degeneracies by means of a ſpontaneous corruption, an incongruous mixture of things which ſhould be ſeparated, or the ſeparation of thoſe which ſhould be mixed, a retention, and higher exacerbation of the excrementitious matter, an excretion of the uſeful parts, or an inquination of theſe on account of their being blended with ſordes, and other innumerable evils which may flow from theſe.

306. The acrimony derived from theſe ſources, incited by the vital motion and heat, induces itchings, pains, ſpaſms, convulſions, irregular motions of the fluids by the ſolids being irritated, immeability from conſtriction of the veſſels, ecchymoſis, immoderate evacuations, puſtules, ulcers, caries, atrophy from their eroſions, and many other perturbations of the functions: Theſe are things which are common to every acrimony of the fluids: But every ſingle one has ſomething particular, as it happens to differ in its nature from others. All of them, however, have not the ſame origin.

Having ſpoken thus far with regard to them in general, we now proceed to treat of them in particular.

307. Acor, chiefly infeſting, and principally injurious to the *primæ viæ*, in proceſs of time entering the blood, and humours ſecerned from it, is produced from the conſtant uſe of acids and aceſcent things, which cannot be ſubdued by the powers of the body, or ſuch as human nature cannot aſſimilate, by reaſon of the weakneſs of the digeſtive faculty. An univerſal debility (157.), therefore, of the whole ſolids, or more particularly of the digeſtive organs, an irritability (190.) perverting the

regular motion of theſe; an inefficiency or defect of the fluids of digeſtion, faintneſs of the circulation, a diminiſhed animal heat, and a neglect of animal motion, all diſpoſe to this effect; as appears from the age, ſex, and manner of life, in which this acrimony more frequently occurs.

308. Of thoſe who are affected withthis vitiation, beſides the things already enumerated (306.), their bodies are rendered pale and frigid, by an acid attracting the water, and diſſolving the earth and phlogiſton, the ſolids are relaxed, flexibility (160. III.) and brittleneſs are produced in the bones, the vigour of the circulation and of the vital power is diminiſhed: Hence ariſes a vitiated craſis of the fluids, and an ineptitude for the purpoſes of circulation, aſſimilation and nutrition, beſides other innumerable evils.

309. Hence we are to conſider the nature, quality, and noxious power of acerbity. This is produced from an acid fixed in much earth, and joins ſpiſſitude to acrimony, by which, coagulations of the fluids, obſtinate obſtructions, and conſtrictions of the veſſels, are induced (234. 285.).

310. An alcaleſcent, volatile, pure acrimony is ingendered in the fluids from the abuſe of acrid vegetables, which abound with an alcaleſcent volatile ſalt; alſo with thoſe things, which, upon being mixed with the native ſalt of the body, ſeparate the volatile from it: Of this ſort are lixivial ſalts, ſoap, &c. Aromatic and hotter ſubſtances, daily ingeſted, by their conſtant ſtimulus, change our ſalts, by their heating nature, into that kind of acrimony. Some poiſons are perhaps to be referred to this head. A more intenſe heat favours their action.

311. The particular effect of this ſort of acrimony is to attenuate the fluids too much, by diſſolving the craſſamentum; alſo, by the increaſed motion, the ſolids being irritated, and the veſſels eroded, they ſcarcely can be contained, but are every where effuſed. The conſequences which thence enſue have been already remarked (288.).

312. Putreſcency has an affinity to the former vitiation (310.), but by no means to be confounded with it. It denotes a compound kind of acrimony, in which the fluids affected have, at the ſame time, a volatile alkaline ſalt, and an acrid rancid oil mixed. The corruption of either ſubſtances conſtitutes putrefaction, but chiefly the latter, which ſingly can ſubvert the volatile alkali.

313. This putreſcency, ariſing from different cauſes, has its foundation in the ſpontaneous tendency (149.) of our bodies to this vitiation; in promoting ſome degree of which, as well as in its preventing its exceſs, nature diſplays wonderful promptneſs. The ſound fluids themſelves may, therefore, furniſh matter for this corruption; next to that, animal food much diſpoſed to putreſcency of itſelf, or after the preparation it undergoes; a rottenneſs of the air or water received into the body; worms infeſting the *primæ viæ*; ulcerous, carious, cancerous, and gangrenous matter infecting the humours with tabefaction. Great heat likewiſe facilitates the ſeptic operation; heat ſucceeding intenſe cold, too great agitation, a want of renewal and ſtagnation of the air, and an inſufficiency of meat and drink, while life is in vigour, all tend to bring on and haſten putrefaction; add to theſe a retention of excrements, medicines, poiſons, miaſmata, and contagion; which, although they cannot

not, of themſelves, be ſuſceptible of putrefaction, by their fermentative or ſtimulating power, may, however, induce it, when mixed with the humours which are applied to the living ſolids.

314. This acrimony, moſt injurious to health, when once produced, diſſolves the fluids, and renders them unfit for the purpoſes of nutrition, liquifies the fat, and infects it with rancidity, irritates, erodes, and waſtes the ſolids, hence it creates acute fevers, inflammations, exanthemata, gangrene, ſphacelus, and many other perturbations of the functions, frequently not to be ſubdued, either by nature or art.

315. The conſtant uſe of ſalt meat, and a too ſparing uſe of drink, diffuſes a muriatic acrimony through all the humours. From the reſolution of theſe, there ariſes a greater gravity and exaſperation of the aqueous and mucous part, a more rapid circulation, an increaſe of animal heat, itchings, eroſions, effloreſcences, and a putrid tabefaction of the fleſh, or an inflexible hardneſs from too great a quantity of ſalt impacted in the earth.

316. The ſame thing may be imputed to an ammoniacal acrimony, which ſuppoſes a redundance of the native ſalt, or another having affinity to it, and can be produced from a ſuppreſſed excretion of the ſalts, or an immoderate quantity of alcaleſcent and acid ſalts (307. 310. 312.) maſtered by the uſe of the oppoſite kind.

317. Theſe acrimonies are the moſt frequent and manifeſt with which the maſs of fluids are infected. There remain many others, which belong to particular ones only, to be treated of in their own place, and which are more properly ranked among the cauſes of diſeaſes.

Diſeaſes of the Humours, from a ſeparation of Particles.

318. If we here ſuppoſe it requiſite, that, among the different parts of which the fluids are compoſed (274. to 280.), there ſhould be ſome degree of adheſion, which may preſerve their mutual commixture, and prevent their ſeparation, another genus of vitiations common to the whole fluids (289.) here preſents itſelf, which ſuppoſes a too eaſy ſeparation of ſome parts from others: From which diſcracy the nature and origin of many diſeaſes is underſtood.

319. Suppoſe, for inſtance, that the aqueous portion coheres leſs intimately with the craſſamentum (274.); by their mutual ſeparation, there is produced ſpiſſitude and inertneſs in the latter, and other evils, before enumerated (285.). The tenuous part, on the other hand, cannot be confined in the veſſels, but iſſues out of the body by perſpiration, the immoderate increaſe of ſweat, urine, the alvine excretion, and plyaliſm (288.), accumulated and ſtagnating, produces various ſpecies of the dropſy.

320. But as the texture of the craſſamentum may be changed from the natural ſtate, either by a vitiated proportion or diſpoſition of its parts (276.), ſo the concretion (319.) occaſioned by the ſeparation will be different. A redundance of mucus (278.) will produce a viſcid, clotty, grumous inſpiſſation: An abounding and evolved phlogiſton will beget an unctuous, ſebaceous, reſinous, feculent viſcoſity: A greater quantity of earth, leſs compact, as having a ſmaller proportion of oil, of a ſtyptic nature, from the more intimate mixture of the ſalt

with the acid, not enough ſoluble, whenever it ſeparates, will generate calculous, tartareous, and oſſeous indurations in the parts.

321. It would be difficult to aſcertain all the cauſes by which this affection is induced. It is credible, however, that it is owing to errors in diet long perſevered in, faults in digeſtion, vehement or conſtant perturbations of circulation, and the vital motions, ſpaſms, immoderate excretions, &c. to which perhaps we may refer a hereditary diſpoſition.

Diſeaſes of particular Humours.

322. THE fluids of the human body very much differ from one another, in circumſtances very material, as by that every one is rendered fit for the uſes required. Wherefore the many alienations from the natural ſtate, which occur in this way, as well on account of their frequency, as their being almoſt conſtantly connected with a general vitiation, are more eſpecially to be attended to; they, therefore, require to be treated in detail.

Vitiations of the Chyle.

323. THE chyle of the *primæ viæ* is a juice extracted from the meat and drink ingeſted, mixed with the fluids of digeſtion which conſtantly flow thither, where the aliment is lodged, and changed by the power of the air, heat, and digeſtive organs. It muſt therefore both participate of the nature of the things from which it is extracted, and be affected by the power of thoſe things by which it is

changed; and ſo, from this two-fold ſource, may contract bad, as well as good qualities.

324. But as it is deſtined for nutrition, and ought to be diſtributed through the whole body, the vitiation is not confined to itſelf alone, but is diffuſed through all the humours; ſo that the origin of moſt cacochymies may be reaſonably traced up to this.

325. An acrid acrimony (307.) produced from its own cauſes, and frequently exiſting in the chyle, produces acid eructations, cardialgia, bulimy, flatulency, tormina, ſpaſms, pyroſis. It principally weakens the bile, and infects it with harſhneſs and virulency, which is from hence derived to the alvine fæces. The acrimony at laſt, being carried into the circulatory ſyſtem, is the cauſe of innumerable evils.

326. An auſtere chyle is generated from things of a ſimilar quality ingeſted, ſuch as immature, harſh, and auſtere wines. From the abuſe of abſorbents, aſtringents, and coagulating ſubſtances; eſpecially, if not copiouſly diluted with ſome liquid, and, in a debilitated body, are not attenuated by the ſaponaceous power of the bile, or a briſk animal motion. It produces chill and contorting pains in the *primæ viæ*, anxiety, &c. It impedes its own entrance into the lacteals, hence ſtagnating, and being mixed with the immeable fæces, it deprives the body of its nouriſhment; or, if it is admitted, obſtructs the glands of the meſentery, and creates injuries by imparting the corruption to other humours.

327. There is in this fluid various origins of putreſcency and nidoroſity (312. 313.). This, when once begun, infects the menſtrua of digeſtion,

and imbues the whole tract of the alimentary canal with its mephitic effects, communicates a ſeptic quality to the ſubſtances afterwards ingeſted, and diffuſes itſelf far and wide through the body. Hence ariſe nidorous eructations, putrid foulneſs of the mouth, tongue, and fauces, thirſt, want of appetite, nauſea, vomiting, anxiety, troubleſome heat, putrid diarrhœa, aphthæ, and the evils above-enumerated (314.), upon the putrefaction being carried into the interior parts.

328. A rancid, aduſt, oleaginous acrimony, is generated in the chyle from the ingeſtion of pinguid ſubſtances roaſted, fried, or become rancid, not ſufficiently maſtered by the menſtrua of digeſtion, or too much acted upon by the internal heat. It raiſes violent cardialgia, eructation, and vomiting of a bitter, pinguid, hot, rancid, acrid matter, loathing of food, great thirſt, dryneſs, uneaſy heat, cadaverous, greaſy, hot alvine fæces, acrid, ſcalding, frothy, inflammable urine, ardent fevers, eryſipelas, acrid inflammations ſcarcely to be reſolved, and other ſymptoms far worſe than theſe, if it has at laſt imbued the fat of the body with a ſimilar vitiation.

329. A too glutinous chyle proceeds from the long and conſtant uſe of crude, farinaceous, frigid, viſcous, glutinous, and pinguid ſubſtances, which, through a paucity or inertneſs of the digeſtive liquors, weakneſs of the coctric powers, languor of circulation, or a ceſſation of animal motion, are not ſufficiently ſubacted (283. 284.). From which vitiation there flow anorexy, ſenſe of repletion, vomiting of gluten, ſaliva, and bile; inviſcation of the other menſtrua belonging to theſe organs; laxity of the ſtomach and inteſtines; an impeded ſecretion

tion, and abſorption of the chyle; a ſlow and gradual tumefaction of the abdomen without pain; an acid, putrid, and rancid corruption from ſtagnation; obſtructions of the meſentery; an exuberance of mucus in all the humours (283.); and the effects from thence produced (285.).

330. The chyle, at laſt carried into the blood, capable of being changed into milk by the preparation in women's breaſts, and therefore, ſimilarly to this, ſeems to conſiſt of three kinds of matter, ſerum, cream, and curd, equally mixed, proportioned, and coaleſcing with each other. In the ſerum water, in the cream phlogiſton, in the curd an earthy, ſaline part prevails. It is therefore probable, that vitiations, in reſpect of proportion, can be produced, which may alienate the requiſite properties of the chyle, and increaſe or diminiſh too much the degree of mutual adheſion, ſo as to ſeparate from each other more ſlowly, or readily than is proper. To this may be applied the things already enumerated (274. to 280. 282. *et ſeq.* 318. to 321.).

331. Is therefore a redundance of the chyle, cohering too looſely with its particles, the cauſe of obeſity?—Many circumſtances teach us, that fatneſs takes place in the body from the oleaginous part of the chyle being depoſited in the cellular texture. That the cream likewiſe is rather ſimply mixed than really diſſolved in the milk, is indicated by its ſpontaneous ſeparation upon being allowed to ſtand. If adipoſe aliments, therefore, plentifully uſed, fill the chyle with a redundance of fat, which neither the ſaponaceous power of the humours, the bile eſpecially, nor a briſk circulation, or an increaſed heat, or animal motion, can rightly

ſubdue, by the ſame eaſily ſeparating, the body muſt be neceſſarily infarcted.

Affections of the Blood.

332. THERE is not found, either produced by nature or art, another fluid out of the animal body like the blood: Wherefore it is, that the effects of animal life appear to be the more ſingular, becauſe it has for its matter aliments that are without blood.

333. It is evident from a chemical analyſis, that the blood is compoſed of the ſame elements with the reſt of our humours (275, 276.), partly tenous, partly groſs (274.), but it is as it were the common mother of them all: It differs, however, much from ſome particular ones. Hence, it will be worth while, firſt to treat of thoſe things which it has peculiar to itſelf, and which manifeſts, without the aid of experiments, that its texture may be more clearly underſtood.

334. The blood, as it flows from the veſſels of the body when ſound, when received into a cup, diſcovers itſelf to be a fluid ſomewhat thick, of an uniform dark and red colour, unctuous and glutinous to the touch.

335. There is perceived to ariſe from it ſpontaneouſly, a halitus of a ſmell ſomething fœtid, which, when received into, and condenſed in a glaſs bell, turns into a colourleſs liquid, ſcarce to be diſtinguiſhed from pure water, unleſs by its odour. This is a part of the blood more volatile than the reſt, and in a very ſmall quantity, which may be called a ſpirit *ſui generis*.

336. In the mean time, the blood which remains, whenever it is expoſed to the air, is converted into a tremulous gelatinous maſs, of an uniform red colour, like to fat that has been melted in the fire, and congealed again by cold: From this it appears, that its fluor is preſerved by the heat and motion of the living body.

337. Afterwards, there exudes from the ſurface and ſides of this coagulum, a thin fluid, the drops of which, being by themſelves collected in conſiderable quantity, ſurround the red portion, which, on this account, is more contracted, and, being every where removed from the ſides of the veſſel, cauſes it to ſwim in the manner of an iſland.—This is the firſt ſeparation into ſerum and craſſamentum, which are very different.

338. The ſerum, ſpontaneouſly fluid, eaſy to be diluted with any quantity of water, tranſparent, of a yellowiſh colour, ſaltiſh to the taſte, ſomewhat viſcid, being a mucus (278.) very much diluted, by the heat of 150 degrees of Farenheit's thermometer, is ſuddenly converted, without much diſſipation, into a whitiſh ſciſſile maſs, like the white of an egg, which, when continued in a moderate heat, ſeparates into two parts; the one a volatile colourleſs fluid very like water, and in conſiderable quantity; the other a fixed, ſolid, corneous ſubſtance, brittle, but with ſome tenacity, of a yellow aſh colour, never red or blackiſh red; when of entire ſerum, of ſmall bulk, and inſoluble in water. This is the third ſeparation which diſcovers, in the ſerum, water and gluten impregnated with ſalt, and a ſubſtance of the nature of the white of an egg.

339. The red craſſamentum, although it ſeems to be homogeneous, by an experiment, however, ſepa-

rates into different parts; for if it is laid upon a linen cloth, and water repeatedly poured upon it, the whole of the red part paſſes through the pores of the linen with the water, there remaining a fibrous membraneous maſs, void of redneſs, that is immeable. This is the fourth ſeparation into a red and fibrous part.

340. The fibre of the blood turning white when repeatedly waſhed, of a membraneous texture conſiſting of filaments, not ſoluble in water, exhibits a ſubſtance not unlike the ſerum when boiled in the fire (338.). This portion, the baſis of the craſſamentum, is exceedingly different from the red, which likewiſe differs from the ſerum; ſeeing it ſpontaneouſly turns ſolid as the blood cools, and ſeparates from the ſerum, with which the red globules more readily unite, and by attracting them intimately mix. Is it therefore preſent in the blood while in the body? or is it only produced by effuſion?—The fibrous matter certainly is, but is hindered from coagulating while the blood is heated by the vital motion; nor is it an argument that it is abſent, becauſe it is not detected by the microſcope.

341. The red part, diffuſed in the water (339.), and almoſt diluted *ad infinitum*, ſtill preſerves its red colour, and never changes to yellow; ſo that not the ſmalleſt drop of newly taken blood, mixed with a quantity of warm water, is ever changed, but preſerves its redneſs. Is, therefore, its red colour to be aſcribed to a cloſe yellow? It is ſcarce credible.

342. The ſame part, when mixed with water, as it paſſes through the linen, whenever it is boiled on the fire, ſeparates into flakes of a pale red, which, when ſtrained, leaves the water colourleſs; becauſe

part of the ſerum, together with the red portion of the blood waſhed through by the water, and coagulating into white flakes, while it leaves the water, it draws along with it the red portion which it has inviſcated, and the white and red being mixed, there muſt be neceſſarily produced a paler coloured maſs. It therefore cannot be ſaid, that the red portion is mixed with the water; nay, it even ſeparates, and is only kept diffuſed by means of it.

343. This red maſs (342.), dried by a gentle heat, gives a blackiſh-red ſubſtance, friable, melting with a conſiderable heat, inflammable, which, when analyſed by a chemical proceſs, produces a great quantity of oil, and a ſmall portion of ferruginous earth. It has therefore the nature of reſin.

344. Hence it is evident, that, beſides the ſpirit (335.) of the blood, there are three different conſtituent parts, the ſerum, the red blood, and the fibre. In the ſerum water abounds, in the red blood phlogiſton, and in the fibre earth. To the former is owing fluidity; redneſs to the other; and to the laſt, ſpiſſitude: But though they thus differ from one another, and yet are kept equally mixed by the vital motion, they cannot, however, be ſaid to cohere intimately, or to be chemically diſſolved.

345. Has not the blood, therefore, a great reſemblance to milk? More certainly than to any other fluid. When we compare the ſerum of the blood with the whey of milk, red blood with the cream, and the fibre with the curd, we find many things in common to both, whether we conſider the matter itſelf, or the conſiſtence and ſeparation (330. 331.). So that, not improperly, milk may be called white blood, or blood red milk. The only difference that obtains between the blood

and milk, is effected by the power of the circulation, preſſure in the veſſels, heat, and air conjoined, by which an aceſcent ſalt is turned into an alcaleſcent, a fermentible into a putreſcible; the phlogiſton is more evolved, the earth condenſed.

346. Hence the red matter, which is principally remarkable in the blood, is nothing but its native oil very much attenuated by being mixed with other particles; but is not, however, ſo much diſſolved by its ſaponaceous nature, as not to make a ſeparation from the aqueous fluid whenever the heat and motion ceaſes.

347. Is it evident, then, what we ought to conclude concerning the nature and origin of the red globules, which by the microſcope are perceived in the blood? Theſe are not peculiar to the red portion, but only the oil, which when mixed by agitation with the watery fluid, on account of their mutual diſpoſition to ſeparate, collects itſelf into ſphericles, whoſe conflux is prevented by the interfluent water. Hence they are even obſerved in milk, and may be produced in any ſort of oil by agitation with water; nor is there any mechanical effect required to render them circular. For this reaſon it is, that when the globules are compreſſed in veſſels, they change their figure, and, the compreſſion being taken off, they again reſume their globular ſhape.

348. Nor does what has been advanced concerning the equal bulk and diameter of every ſingle globule, make any thing againſt this concluſion. The powers of a limited circulation cannot divide, *ad infinitum*, the particles of the oil which cohere by a certain force. There is, therefore, given a fixed ſize beyond which they cannot be reduced.

But wherefore ſhould we ſo anxiouſly endeavour to give a reaſon for a thing which reſts upon ſuch a weak foundation?

349. It is ſcarce to be doubted that theſe can be divided into leſſer globules, and, when ſeparated, can form a brighter red colour. But concerning their ſenary diviſion, the ſix ſmaller globules of which they are compoſed, and into which they ſeparate, we cannot advance any thing deciſive. But nothing is more improbable, than that by their ſeparation the red portion is changed into ſerum; and that ſix globules of it combined conſtitute the red globule. Experiments (338. 341.), and the nature of the two ſubſtances, which are exceedingly different, are againſt ſuch a concluſion (343. 347.).

350. Neither can any thing be determined in ſupport of this aſſertion (349.) from the gravity of the red blood, ſpecifically greater than that of the ſerum: For that is only aſſumed with uncertainty; ſeeing the red portion of the craſſamentum can never be obtained entire from the ſerum (342.).

351. To indulge in ſuch ſpeculations is wholly left to phyſiologiſts at diſcretion; but no advantage accrues to pathology from them.

352. From the given analyſis of the blood it can be known to what vitiations it is obnoxious, whether the different parts of it are conſidered ſingly, and by themſelves, or when united, as conſtituting the whole maſs.

353. It is but reaſonable to ſuppoſe, that there is a certain mutual proportion of the three parts (334.) of the blood, which conſpire to form perfect health. But it is not to be believed that this is abſolutely neceſſary, or that every deviation from it cannot be borne with impunity. There would

rather ſeem, even in the ſoundeſt ſtate, to be a conſtant change ſuffered without injury. But the diverſity of age, ſex, temperament, &c. does not even ſuppoſe the ſame proportion to be required in every individual. It will only, therefore, amount to a vitiation, if the deviation is conſiderable, and the ſame very inconſiſtent with the particular conſtitution of the body in which it occurs.

354. An enormous quantity of ſerum augments the proportion of water in the blood; whence ariſes an aqueous tenuity (287.), and the diſeaſes occaſioned by ſerous congeſtions.

355. An exuberance of the fibre muſt induce denſity, immeability, lentor, obſtructions, &c. (*vide* 284. 285.).

356. An exceſs of the red portion denotes an abounding phlogiſton in the blood, which, from the acceſſion of any occaſional cauſe, augments the animal heat, and excites immoderate expanſions, inflammations, &c.

357. Theſe exceſſes are ſo moderate as not to diſturb the functions of health whenever they manifeſt that texture of the blood which occurs in different temperaments. For the firſt (354.) is proper to the phlegmatic, the next (355.) to the melancholic, the third (356.) to the choleric; but there is none peculiar to the ſanguine.

358. The vitiations are of greater moment which pertain to the qualities of the ſingle parts of the blood; although it cannot be denied, that many of them are, perhaps, unknown to us, ſeeing the phyſiology of the fluids is defective in many reſpects.

359. In the ſerum, the water may ſo abound, as to coagulate by heat more ſlowly, and in a leſs degree than ordinary (338.), which vitiation, ſimilar

to the former (287. 357.), is likewiſe produced from the ſame cauſes, and is followed by the ſame effects.

360. There is ſometimes a quantity of inert mucus generated in the ſerum; by which it happens, that the other fluids ſecreted from it are clogged with the tenacity formerly treated of (283.).

361. It frequently happens, that the diſpoſition to coagulation is increaſed in this portion, and in ſuch a degree as to congeal in manner of the fibre.

This conſtitutes the inflammatory diatheſis which we ſhall treat of hereafter among the diſeaſes of the fibre of the blood.

362. The ſerum, in particular, is ſometimes overcharged with an undue quantity of the ſaline matter, either native or foreign; for it abounds with water ſaturated with ſalts, and a mucus inviſcating that which favours the union of thoſe which are introduced to the maſs of fluids. Moſt acrimonies have their ſeat here, and by this vehicle it is diffuſed through all the parts of the body (307. to 317.).

363. The purple colour of the blood (341.), when paler than ordinary, reſembling water in which fleſh has been waſhed, is occaſioned by a deficiency of red matter, or its being leſs compact than is requiſite, the phlogiſton not enough exalted, or ſuppreſſed by mucus, acid, or ſome other extraneous mixture; hence it is wont to be attended with the vitiations treated of (283, 287, 307.), and depends upon the ſame cauſes; nor does it produce different effects. Sometimes it is owing to a corruption.

364. A more florid red is owing to an increaſed motion, a too great attrition, attenuation, and mix-

ture with the ſerum. Hence there enſues a rapid circulation, more intenſe heat, and an increaſe of the ſaline matter (310, 315, 316.). There is, in this caſe, almoſt conſtantly, a diſſolved ſtate of the blood, more ſlowly, or ſcarcely at all, coagulating with the cold, ſoon ſuſceptible of heat by the phlogiſton being evolved, and having a diſpoſition to eſcape from the veſſels, to aberrations and phlogoſis.

365. The colour approaching to black happens from a redundance of earth, or when that is become ſtyptic by an acid infixed, or when ſome heterogeneous mixture has corrupted the texture of the blood, from a vitiated chyle, retained excrements, miaſmata, contagion, poiſons, or a putrid, rancid, gangrenous, cancerous matter admitted. Various acrimonies are its perpetual attendants, and ſometimes there is a greater ſpiſſitude, at another a greater reſolution; which diverſity conſequently carries along with it many different kinds of evils.

366. The fibre of the blood may be defective in having a too ſmall diſpoſition to coagulate, by which it happens, that it ſcarcely ſeparates from the ſerum, and forms no iſland, or one leſs compact, in which there is no proper aggregation of the red globules. The paucity of the fibrous matter, its ſmaller compaction, aqueous or mucous accumulations, (283, 287.), too much attenuation by heat, attenuating ſalts, or other ſtimuli, or corrupting ferments (365.), conſumption through want of the neceſſary ſupplies by aliment, &c. induce this vitiation. Hence ariſe the injuries from a diſſolved ſtate of the blood (287, 288.).

367. The oppoſite vitiation of the fibre is too great tenacity, which ſuppoſes the quantity to be diſproportioned to the ſerum (355.), the whole maſs of blood coagulating and turning grumous; or the diſpoſition to concreting more intenſe than uſual, by which the concretion is rendered more ſudden by ſtagnation and cold, and the ſame more tenacious; ſo that there quickly ariſes, upon the ſurface of the craſſamentum, a thick buffy coat, not red, but white, yellowiſh, ſometimes inclining to green, or lividity, varying in craſſitude, the craſſamentum itſelf being much more compact, and the edges inverted by the contraction of the cruſt, are often made hollow like a ſhield, the ſerum more copiouſly ſurrounding them. By this is underſtood the phlogiſtic cruſt, the inflammatory diatheſis, or the pleuritic coat. But ſeeing this ſubſtance has a very near reſemblance, both to the fibre when waſhed (340.), and to the ſerum concreted by the fire (338.), it is poſſibly produced, when the fibre is too much condenſed in the circulatory ſyſtem, and when the ſerous portion, moſtly, or altogether aquoſity, by a conſtant condenſation, is ſpontaneouſly converted into fibre, inſtantly concreting (361.); ſo that, to conſtitute it, there ſeems to be neither need of fat, nor arterial mucus, fluids very different, nor that the diſſipation of the water alone were always ſufficient. We learn from obſervation, that the ſame powers by which the fibre is generated in the blood in due quantity, by being too intenſe, can induce a morbid exceſs. Hence an increaſed circulation, febrile exacerbations, heat, ſtricture of the veſſels, compreſſion, too much bodily exerciſe, and the abuſe of terreous, aſtringent, heating, ſpiritous things, are daily cauſes of this denſity. The

evils which ſucceed it will be evident from what has been ſaid (285, 355.); if we may add, that this obſtinate gluten, inſoluble in the watery juices, for the moſt part circulated through the body by an accompanying fever, is likewiſe more condenſed by heat, or is not to be diſſolved, unleſs by putrefaction (366.), and is therefore altogether untractable by the powers of human nature.

368. Theſe things being rightly underſtood (353. to 368.), it will not be difficult to aſſign the rationale of the other affections, by which the qualities of the circulating maſs are eſtranged, how far they may really obtain, and may be profitably inveſtigated; as of denſity, gravity, elaſticity, diviſibility, &c. immoderately increaſed or diminiſhed. There are perhaps many other aberrations, but as they can only be ſolved by conjecture, there is no need wherefore they ſhould detain us.

Vitiations of the ſecreted Fluids.

369. From the blood alone diſtributed through the whole body, many juices in different parts, and by a wonderful contrivance, are ſecerned, and each, as they both differ in their nature from one another, and from the blood, intended for different uſes in the animal œconomy, as is demonſtrable in Phyſiology; although the manner in which their particular craſis is formed, is not clearly made out.

370. They, therefore, generally receive their vitiations from the common ſource from which they are derived; but, according to the different nature of every one, may have ſomething peculiar, and may induce different evils; there may be likewiſe ſome proper to theſe after ſecretion, although they

do not occur in others. They, therefore, deſerve to be particularly conſidered.

371. The aqueous, ſaline fluids, among which I reckon the lymph not coagulating by heat, and the menſtrua of digeſtion, which are ſecerned from it, as well as the watery excrements, &c. beſides tenuity (287.), mucous inſpiſſation (283.), and various acrimonies (307. to 317.) may have this in particular, that they too readily ſuffer the earthy particles, diſſolved in the water by the intervention of the ſalt, to ſeparate, and theſe having united upon the opportunity given, may form calculous concretions in many ways hurtful (320.).

372. The bile, although a humour, by its particular nature and texture, greatly different from theſe, is, however, ſubject to the ſame vitiations (371.). But it likewiſe ſuffers a feculent, mucous, aqueous inertneſs, to the great detriment of the natural functions. It eſpecially, when imbued with any extraneous ſalts, or corrupted by ſtagnation, heat, or violent agitation, contracts different kinds and degrees of acrimony, and changes of colour correſpondent to theſe, the native yellow turning into a porraceous, eruginous, blewiſh, or black colour; ſometimes it reſembles the white of an egg. Hence are produced ſo many ſpecies of corruption of the bile, together with their effects carefully remarked by the ancients.

373. The mucous juice (278.), in great quantity, and not with leſs uſe, diffuſed through the parts of the body, beſides the common vitiations of conſiſtence (282. 286.), both by its natural lentor and ſtagnation, is very ſubject to acrimonies, which being inviſcated by its gluten, are with much difficulty diſentangled. Hence are underſtood the ſalt and

acid phlegms remarked by the ancients; likewiſe, the vitreous, by reaſon of an aluminous acerbity inflicting ſevere gripings in its paſſage through the inteſtines; alſo the gypſeous, loaded with much earth (320.) There is not unfrequently a contagious virus lodged in the mucus, very injurious to the ſolids by its increaſing tabefaction, and which ſpreads far and wide.

374. The ſame thing may be ſaid concerning the pinguid juices, as they, by nature, are viſcous, and ſtagnating in the cellular membrane, not ſoluble in a watery fluid, when once they have been ſuſceptible of any impure quality, acrimony, or virulency; intangle and nouriſh theſe, ſubdue the powers of the menſtrua and circulation, and, being as it were ſupplied with pabulum, increaſe, ſo as ſcarcely to be diſengaged.

375. The only corruption proper to the adipoſe ſubſtance, is rancidity, which is very remarkable; ſeeing it can ſcarcely be corrected, when once it has been ſuſceptible of it, and, propagating itſelf by a fermentative power, becomes the worſt of acrimonies, which, corroding whatever it touches, cauſes caries in the bones themſelves. Things ingeſted (328.), putridneſs of the humours (312.), a more intenſe circulation, heat, ſeptic contagions, and poiſons, induce this evil.

376. There is likewiſe produced in the fat a vitiation of conſiſtence: For, when it is in the natural ſtate, it does not conſiſt intirely of oil, but partly of mucus (373.). If the proportion of the latter, from its own cauſes (283.), is increaſed beyond the due quantity, the fat becomes too liquid, diſtends the cellular membrane into an inert, inelaſtic tumour, which alſo more readily imbibing the wa-

ter attracts it from the other fluids, and retaining it produces leucophlegmaſia, dropſy, œdema, &c.—On the other hand, the fat may be rendered too hard, when filled with a redundance of the earth, or this become ſtyptic by an auſtere acor (284. 310. 326.). Hence indurations of the cellular membrane, ſteatoms, and tubercles, differing much in their ſize, form, hardneſs, and ſtate of degeneracy.

377. Whenever the morbid affections of the fluids are ſuch as are ſuppoſed to ariſe from a conflux of fat and mucus, they bear a reſemblance to the reſinous gum of vegetables. They are reduced then to the thick, tenuous, and finally different acrimonies.

378. The milk among the juices deſtined for nutrition, has likewiſe its own peculiar vitiations, which are chiefly owing to the chyle, as appears from what has been delivered (223. 331.).

379. The gelatinous matter nouriſhing the firm parts, ariſing from the glutinous part of the ſerum (338.), and the fibre of the blood (340.), is either too much diluted with a redundance of water (287.), or overloaded with an inert mucus (283. 329.), or infected with various acrimonies. Whence, in furniſhing the neceſſary ſupplies, it rather weakens than corroborates, or even deſtroys by its corroſive power. The earthy ſaline matter, when it abounds, produces incruſtations of the parts, alſo calculous and oſſeous indurations.

380. Does the genital liquor, not by the animalculæ, but by ſome very ſingular quality, beſides the common affections, contract a peculiar acrimony, by which it induces ſalacity? Is inertneſs the cauſe of ſterility? Does it, degenerating in a particular

manner, produce monſtrous fœtuſes? In a matter ſo obſcure, we muſt conclude nothing, until further light is received from Phyſiology.

381. The ſame circumſpection obliges us to paſs over thoſe things which have been advanced concerning the vitiations of the vital fluid (187.); ſeeing they only reſt upon conjecture, and cannot bear a pathological diſcuſſion, nor are they of any certain uſe in practice.

382. And theſe, among many others, are a few of the morbid affections of particular humours, of which, in any way, we are allowed to form a judgment. It is poſſible that there are many others remaining never to be fairly diſcovered; eſpecially when we conſider, that, in every ſingle perſon, according to the diverſity of idioſyncraſies, any one humour may have ſomething peculiar to itſelf, which in the like fluid, in another perſon, is not ſo much as to be found, even in the ſound ſtate; and it is certain, that the diſſimilarity of the ſolid parts alone does not conſtitute the whole difference which is diſtinguiſhed in human bodies, but that the fluids likewiſe contribute a ſhare. However, as they are not known to us, otherwiſe than by the appearance of ſome particular effects, whoſe true cauſes, in ſuch a variety of poſſible ones, we are not at liberty to aſſign, it is better to be ſilent than to ſolve by conjecture what cannot be accounted for on the principles of ſcience.

The relative Diſeaſes of the Humours.

383. It is demonſtrated in Phyſiology, that the principal foundation of the human œconomy reſts upon the co-operation of a ſolid and fluid, limited

by their own laws. There is, therefore, given in health a ſtated proportion of the two agents ſuitably adapted to each other, by which the one is prevented from too much exceeding the other. The great diverſity of the fluids itſelf, and their diſcriminate diſtribution, teach us, that any one indifferently cannot be appropriated to any one part or uſe. Therefore, although the texture may be intire, they can, notwithſtanding, be ſo much in fault, with reſpect to quantity, the place which they occupy, and the degree of motion with which they are circulated, as from the diſordered action of the ſolids to prevent the integrity of the functions (266.); but, becauſe the idea of the diſeaſes, which ariſe from this ſource, includes the neceſſary relation to the ſolids (268.), they are not improperly called relative.

The morbid Quantity of the Humours.

384. A right proportion of the fluids to the ſolid parts is not ſo exactly limited to the bulk, that any exceſs or deficiency induces diſeaſe. The latitude of health, which comprehends age, ſex, and temperament, likewiſe includes ſuch proportions of either, as is agreeable to theſe, although very much differing. Nor could otherwiſe health be preſerved amongſt the perpetual viciſſitudes of things (6.), to which it is ſubjected. The greateſt, therefore, as well as the ſmalleſt deviation in this reſpect, which is borne with impunity, is with difficulty diſtinguiſhed. The former is more readily diſcovered upon the acceſſion of any noxious quality, the latter not ſo eaſily.

385. But if the whole maſs of humours, free of any vitiation, comparatively in point of quantity, immoderately exceed, ſo as, by their turgeſcency, to become a burthen, and diſorder the functions, this may be called polyhymy, and the oppoſite affection oligohymy. The natural ſtate of infancy and old age will give an idea of each: whence even their effects may be underſtood. The alienated ſtate of things ingeſted and excreted will point out the origin.

386. The humid intemperature, which ſhould rather be referred to the head of cacohymy (287. 354. 359.), ſuppoſes the ſolids and fluids overcharged with an immoderate quantity of the aqueous, conſequently too great a proportion of water in the ſerum, and a quantity of the latter diſproportioned to the craſſamentum of the blood. The cauſes and effects of this will be eaſily underſtood from the places already cited. The idea of the oppoſite vitiation, the dry temperature, from thence is alſo evident.

387. In this place, there principally deſerve to be remarked plethora, plenitude, exuberance, which are ſo called, when there is ſuch a redundance of wholeſome blood as cannot be borne in the circulatory ſyſtem without endangering health. Obſervation has not only taught us, that ſuch a ſurcharge has taken place at all times, but it is made manifeſt from a right knowledge of the circulation of the humours. Thoſe are certainly not to be attended to, who would endeavour, by their inſignificant arguments, to explode a matter of ſo great importance. But ſeeing the vitiation, in reſpect of proportion, may happen in divers ways, it will be proper to diſtinguiſh it into different ſpecies.

388. Hence we are firſt to conſider plethora in reſpect of quantity, which is likewiſe called true and abſolute, and ſuppoſes ſuch a real exuberance of blood, as incommodes the containing parts by too much diſtenſion. This is properly the πολυαιμια of the ancients, or plethora relatively to the veſſels. When it lights upon a temperament of a laxer ſort, the body becomes turgid and red by the blood every where diffuſed; on the other hand, the greater veſſels are more diſtended in bodies that are firmer, and the veins that are lax in compariſon of the arteries, are exceſſively tumified. Whence we underſtand the plethora comparatively to the habit, and to the veſſels or veins eſtabliſhed by the moderns. This may be induced by an eaſy indolent manner of life in the vigour of health, by which means the robuſt viſcera generate more of a laudable chyle than nutrition and the neceſſary excretions demand.

389. The next in affinity to this is plethora relatively to ſpace, as it is called, becauſe it ariſes from a diminution in the ſize of the circulatory veſſels, the quantity of blood not being proportionably leſſened. The blood, without doubt, immoderately exceeds, although not by quantity or expanſion, if the ſpace in which it ought to be contained is contracted. Conſequently it is called relative, as it owes its whole origin to the firm parts either being too much conſtricted (195. 209. V.) by fear, a febrile acceſſion, the intervention of great and ſudden cold, &c. or theſe themſelves through rigidity (164.), dryneſs or coalition (209. VI.), being incapable of yeilding, impervious, or mutilated.

390. There is likewiſe plethora *ad volumen*, which is likewiſe called apparent and ſpurious, and which, by the expanſion of the rarified blood, reſembles in its

effects an increaſe of quantity, although there is no real redundance: For when the capacity of the veſſels are not in a proportionable degree dilated at the ſame time, the expanded fluid, with which they were before moderately replete, not otherwiſe than by occupying a greater ſpace, raiſes a turgeſcence like a true plethora. Great heat, from the air, fire, bath, meats, drinks, medicines, ardent and inflammatory fevers, exerciſe, affections of the mind, friction, &c. excited in the body, great and ſudden diminution of the preſſure of the atmoſphere, particular inteſtine motions of the fluids from the intermixture of extraneous matters, &c. may give occaſion to this vitiation: But it is more certainly produced if irritability (190.) has acceded, or if a texture of the blood more ſuſceptible of rarefaction has given a prediſpoſition (356. 364.), or a quantity of liquified fat received into the circulating maſs, which heat greatly expands.

391. Does it from hence appear what we ought to conclude concerning the plethora *ad vires*, or comparatively to the natural powers?—This ſome of the moderns have abſurdly endeavoured to explode, when the thing itſelf not only happens, but even under various forms. That redundance of the blood is ſo called which the natural powers are not ſufficient to carry or propel, conſequently are overpowered and oppreſſed with the load. Any of the ſpecies of plethora (388. 389. 390.) when advanced to a height, and not timeouſly relieved, even in the robuſt, becomes a burden to the natural powers, which induces a ſpontaneous laſſitude, averſion to motion, and a ſenſe of weight. In weak habits (159.) likewiſe, a ſmall redundance, eaſily endured by the ſtrong, is injurious to the

weakened canals, and affects them with congeſtion, oppletion, and eruption (203. 204.). To more irritable natures (190.) a ſmall exceſs of the humours proves ſtimulating, of which when they perceive the moleſtation, they run into inordinate motions that they may avoid the irritation, and fatigue themſelves by exerting their powers in vain. Finally, the habit of letting blood, whether artificial or natural, as it induces a neceſſity of repairing the loſs, ſo it creates an intolerance of it when repaired; the quantity becomes a burden, having a tendency to oppreſs. Whether or not then is there a plethora *ad vires*?

392. It is manifeſt likewiſe, that different ſpecies of plethora (388. 391.) may be complicated, and together with theſe a vitiated quality of the humours joined. Hence is underſtood the euhymic, and cacochymic plethora, as diſtinguiſhed by ſome. It is denominated an active plethora, when its turgeſcence has occaſioned injuries and threatens greater.

393. A paucity of wholeſome blood, which ſuppoſes a mere deficiency, but not dyſcracy too, is ſeldom induced but by ſome great and ſudden evacuation; nor can it be long ſuſtained without being attended with a vitiated quality, from the proſtrated vigour of the functions. This is connected with that which is occaſioned by hunger. Leſt a gradual expence of the humours, although great, may induce κȣνεαγγειαν, or depletion, nature, by a proportional contraction (209 V.) of the veſſels, guards againſt it. Upon nutrition being afforded when the diſeaſe is overcome, the exhauſted are ſoon reſtored, otherwiſe it degenerates into cacochymy.

394. To this place belongs obeſity, but is not, however, to be confounded with plethora, with

which it is often attended, or ſupervenes. It denotes an exceſs of wholeſome fat, diffuſed through the parts, which obſtructs the functions. Health, indeed, endures very different quantities of this ſubſtance without any remarkable impediment, but when ſuddenly increaſed to an exceſſive load, it is not leſs oppreſſive than a redundance of blood. But it is for the moſt part produced from the ſame cauſes that plethora (388.) is, and either ſupervenes or is ſubſtituted in the place of this, when, from a fuller diet, a greater quantity of laudable chyle is conſtantly carried into the veſſels than can be diſſipated by a briſk circulation, converted into blood, or expended in nutrition; hence it depoſits its oleaginous part in the lax cellular texture. For which reaſon a laxer habit of body, infancy, middle age, and the more delicate ſex, diſpoſe to this effect.

395. A deficiency of fat or leanneſs ſcarcely happens in ſuch a degree as to be accounted morbid, unleſs attended by other affections upon which it depends as a ſymptom, or by the concurrence of which it is rendered hurtful. As acrimony itſelf is very frequently the cauſe of emaciation, ſo it very eaſily joins as an attendant, if either a poverty of a bland, oleaginous chyle, an immoderate evacuation, or a waſte in whatever way occaſioned, has conſumed the fat.

396. Exceſs or deficiency of the other juices, either belongs to the head of cacochymies (354. to 368.), or finds a more proper place among the cauſes of diſeaſes or ſymptoms.

Local Aberrations of the Fluids.

397. ALTHOUGH the ſeat of the fluids of the human body is not ſo fixed as the ſolid parts, nor the places where they reſide ſo limited; they have, however, their own receptacles, cavities, canals and repoſitories allotted them by nature, in which they are contained, as if within certain bounds, beyond which they cannot paſs without injury. This is eſpecially manifeſt in particular juices, and in thoſe which, being collected, are depoſited in certain parts. But theſe are not even excepted which are more univerſal, and by an uninterrupted motion are circulated through the whole body. For it is not conſiſtent with health that the blood, ſerum, lymph, &c. be contained indifferently in any kind of veſſels or cavities.

398. From this relation, therefore, which the contents bear to the containing parts, a principal claſs of diſeaſes ariſes, which, as the fluids are contained in an unuſual place to which they do not naturally belong, are not improperly denominated *errores loci*, or aberrations, and are divided into different ſpecies, the chief of which we ſhall now treat of.

399. I call that an aberration of the circulating fluids, when ſome one of the native juices of the body is transferred from its proper veſſels into others not its own, and, contrary to the determination of nature, paſſes through theſe as if proper to itſelf, but without any antecedent vitiation either of obſtruction, effuſion or excretion. This very often takes place in the circulatory ſyſtem, where, by an accelerated motion, or an increaſed heat, the fluids are rarified, the veſſels relaxed and enlarged, or

when ſome groſſer part of the blood is propelled further than uſual, and circulates in veſſels that are too ſmall, and out of its ordinary courſe, a deviation indeed often ſuſtained without injury, but ſometimes dangerous. The fat ſtagnating in the cellular texture let ſuddenly into the veſſels; the bile exceeding its limits, and diffuſed through the blood; the urine, matter of perſpiration, &c. when, after retention, they regurgitate into the circulating maſs, will afford a ſpecimen of the injuries which ſuch a vitiation induces. Hence neceſſarily ariſe various diſorders in the ſecretions. Can we likewiſe refer to this the reception of a morbific matter, ſomewhere ſtagnating, into the common tract of circulation, or ſome part of the ſame remaining mixed with the circulating humours, which ought to have been evacuated or depoſited in its proper place?

400. I call it an aberration of impaction, when any fluid is conveyed into veſſels to which it does not belong, and, by reaſon of its being impacted, cannot paſs through them, but blocks up the cavity which is by nature too ſtrait, and does not admit of a paſſage to itſelf, or others that are thither directed, there concurring a threefold vitiation, aberration, ſtagnation, and obſtruction (209. I.): At the ſame time, if the containing parts and contents are conſidered relatively, they will be found ſcarcely alienated from the ſound ſtate. It is readily produced from the former error (399.), when a groſſer fluid is propelled into extraneous veſſels, the diameters of which naturally decreaſe, or are diminiſhed by a ſupervening ſpaſm (209. V.), is at laſt ſtopped through ſtraitneſs, a paſſage being denied. That there may ariſe various kinds of infarctions,

farctions, tumours, metaſtaſis, inflammations, &c. from this ſource, it is not difficult to perceive.

401. There is likewiſe an aberration of the excretories to be taken notice of, where it happens, that a fluid propelled into unaccuſtomed veſſels, and falling out from their orifices, is, contrary to the natural order, diſcharged from the body. Of this there are two ſpecies: For, either an uſeful matter, which conſequently ſhould be retained, digreſſing from its proper veſſels, and carried into the excretory ducts, is thrown out as if a recrement, the expence being often irreparable: Excretions of chyle, blood, ſerum, lymph, &c. by the belly, urinary paſſages, ſkin, &c. in various alvine fluxes, diabetes, bloody urine, and colliquative ſweats, demonſtrate this: Or that matter, which nature has deſigned for excretion, is transferred to ſome other emunctory not its own, by which it is diſcharged; a depravation indeed the more eaſy to be ſupported of the two, as there is here no expence of a neceſſary fluid; but, by the injuries it occaſions elſewhere, proves hurtful, ſeeing it is not convenient that any excrementitious part be indiſcriminately ſent out by excretory. The bile, urine, matter of perſpiration, alvine fæces, menſtrual blood, &c. ſometimes ſuffer ſuch an aberration.

402. To this head may be referred the depravation of effuſions, offending in a multiplicity of ways, which, in a more general ſenſe, it may be proper to call ecchymoſis: Namely, when ſome matter effuſed from its veſſels is not conveyed out of the body, but being received into the interſtices of the parts, there ſtagnates, and is accumulated. Of which vitiation there are many ſpecies, and the

miſchiefs they occaſion to the human œconomy far more numerous.

403. The various affections of the emitting veſſels, which favour the efflux, make a difference, ſuch as anaſtamoſis, diaræſis, diapedeſis (203. II. III. IV. 207.). There is a difference, likewiſe, in the recipient cavities, as they may be greater, or ſmaller, natural, or made by violence. The cellular texture, which every-where fills up the interſtices of parts, very eaſily admitting of diſtenſion, frequently and readily affords a receptacle to effuſions. There is chiefly to be remarked a diverſity of the matter infuſed, as from it there ariſe ſo many different ſpecies of diſeaſes, which are attended with different ſymptoms. We may obſerve an aberration of the blood when effuſed from its veſſels in bruiſes, ſpurious aneuriſm, exanthemata, inflammatory tumours, internal hæmorrhages, &c. Nor can this ſtagnation be ſuffered for any time in a fluid ſo ſuſceptible of change, but by coagulation (336.), ſeceſſion of parts (337.), ſuppuration, the texture is vitiated.

When the lymph of the blood effuſed is accumulated in the interſtices of the ſolids made, by a diſtending force, in the cellular membrane of the whole body, or of particular parts, in the greater or leſſer cavities, there ariſe bliſters, leucophlegmatia, dropſy, anaſarca, hypoſarca, of the abdomen, thorax, head, ſcrotum, internal parts, œdema, &c.

The fat, bile, chyle, and other particular fluids, when they ſuffer this aberration, induce different evils.

A corrupted humour, pus, ichor, purulency, or morbific matter, crude, or concocted, when effuſed into cavities or interſtices of parts, bring an empyema,

ema, abſceſs, ſinuſes, fiſtulas, ulcers, metaſtaſis, ſalutary, noxious, &c.

The air alſo, as it occupies its own ſet of veſſels in the body, and circulates according to nature, when digreſſing from theſe, and is received into other cavities, or into the cellular texture, thence there ariſe flatulent, elaſtic tumours more or leſs, ſometimes expanded over the whole body. Hence empneumatoſis, emphyſema, tympanies. It may likewiſe happen, that an elaſtic matter latent in the humours, like air, when occaſionally extricated, gathering itſelf together upon recovering its elaſticity, and wandering, as it were, from its place, by its expanſion will produce flatulent tumours like the former.

404. May we likewiſe eſtabliſh an aberration of the nouriſhment, if at any time nutritive particles are applied to parts whoſe mixture is of a diſſimilar kind; by means of which the due texture and conſiſtence of the ſolid is perverted, the ſkin degenerating into callus or horn, the muſcular fleſh into tendon or cellular membrane, a ſoft part into a cartilage, bone, tooth, ſtone; or, on the other hand, a bone into a ſofter maſs?—It is hardly credible, that ſingle particles of the nutritious juice are altogether of the ſame mixture (138.), and, of whatſoever ſort they may be, that they indiſcriminately anſwer for nouriſhing any of the ſolids indifferently (146. 147). Nor does it appear that human nature poſſeſſes the power of fabricating at diſcretion any ſort of mixtures from any others, by a varied proportion of the elements. If, therefore, nutritious matter ſuffers an aberration, although ſound, by a vitiated aſſimilation in conſequence thereof, the ſub-

ſtance of the parts ſeems from that cauſe to be capable of a remarkable alienation.

405. Finally, there not unfrequently obtains an aberration of the ſecreted fluids, but, as it may be only the effect and conſequence of the former affections (399. to 404.), it ſcarcely merits a particular conſideration.

Vitiations of Motion in the Humours.

406. It is evident that the humours of our body, both with an inteſtine motion of their own particles, and a progreſſive motion of the whole maſs, are naturally incited. Health can be without neither, which, however, requires a moderate degree of both; nor can any exceſs or defect, or alienation, be borne with impunity.

407. The inteſtine motion, which reſpects fluidity, is determined by the manner of the increaſe or diminution of the latter; hence the vitiations which it ſuffers may be referred to a too great tenuity or ſpiſſitude, and underſtood from what is delivered (271. *et ſeq.*). That other ſpecies of the ſame are excited, the greater and more ſingular power of which may be in changing the craſis of the humours, as well in health as in diſeaſes, the manifold differences of the liquors extracted from the blood alone, and the greater number of degeneracies, ſeem clearly to indicate. It is likewiſe probable that the admixture of heterogeneous matters, which enter the body with the humours, or particular vibrations of the ſolids, ariſing from ſome occaſional cauſe or other, much contribute to the producing motions of that ſort: But it would be difficult to aſcertain the peculiar nature, and

explain the determinate cauſes, from whence particular ones flow, and their modes of acting. Chemical fermentations, applied in the ſound ſenſe, illuſtrate indeed, but do not, however, ſolve the queſtion. Neither do they better explain the matter, who contend that the whole cauſe of the effects ought to be entirely aſcribed to the varied action of the ſolids.

408. The other more manifeſt motion of the humours (406.), by which they are conveyed through veſſels from one place to another, may be alienated in a threefold manner; for inſtance, by an increaſed, or a too diminiſhed velocity; alſo by an irregular direction.

409. An increaſed motion is owing to a more intenſe action of the ſolids upon the fluids. But whatever things incite the moving powers of theſe, ſuch as various irritations (171. to 181.), whether acting directly upon the body, or upon the body by the mind, heighten this; or whatever leſſens the reſiſtances oppoſed from the bulk of the humours, ſpiſſitude, adheſion, or from rigidity of the canals, anguſtation (209.), &c. Of this ſort there are reckoned very many. Neither are the effects which thence enſue inferior in number, and which, on account of the wonderful conſent of the human oeconomy, often reciprocally produce, increaſe, and multiply their own cauſes. The principal effects are a greater irritation and agitation of the more general ſolids, from the fluids being moved with too great impetuoſity; hence a ſtronger attrition; increaſe of heat; rarefaction of the humours; diſſipation of the more ſubtile; inſpiſſation of the craſſamentum; a putrid reſolution; acritude of the more bland; exacerbation of the acrid; diſtenſion

of the canals; rupture; every kind of aberration of the humours (339. to 405.), and innumerable evils, eſpecially of the acute kind, which finally enſue from theſe. Nature, however, very frequently uſes this exceſs itſelf as an efficacious remedy, by which ſhe ſubacts crude things, corrects and expels the noxious, renders the acrid more bland, attenuates the groſs, opens obſtructions, and effects many other things for the health of the body (99.).

410. Hence is underſtood the ſluggiſh motion of the humours ariſing from the oppoſite cauſes, which, with the declining mutual action of the ſolids and fluids, gradually tends to ſtagnation, by the vital power itſelf turning torpid (196. 198. 5*th*); it induces languor upon all the functions, ſuſpends many, or altogether aboliſhes them. Whence come the manifold origins of chronic diſeaſes, their intractable diſpoſition and very difficult cure, on account of the proſtrated powers of nature.

411. In the ſound ſtate every part of the body whatſoever receives its due proportion of humours, whether we regard the quantity of the maſs, or the degree of motion by which it flows: Neither does the ſize of the parts ſo much determine this proportion, as the diverſity of the nature and function for which they are intended. Therefore, although a ſlighter exceſs or deficiency may not immediately prove hurtful, one more conſiderable, however, and of longer continuance, may occaſion injuries. A too great afflux certainly either irritates the veſſels by an immoderate impulſe, and excites in them ſtronger motions (170. 195.); whence an attrition, heat and transflux more intenſe; a more copious attraction of a new humour; revulſion from other parts; depletion of theſe, and the like; or it infers an inſuperable

able reſiſtance upon the coats; whence dilatation, anaſtamoſis, diapedeſis, diæreſis (203.), and innumerable bad conſequences that flow from theſe (207.). A deficient influx produces the contrary evils. Nor is it difficult, from what has been advanced (409.), to inveſtigate the cauſes of either exceſs, as they ought to be chiefly ſought for in the perverted manner of the moving powers, or thoſe which make reſiſtance.

412. The more limited motions of the humours, which nature further poſſeſſes, pertaining to circulation, ſecretion, excretion, effuſion into the cavities of the body, abſorption from theſe, &c. ſo much depend upon the former (406.) as to flow from them, like effects from their cauſe, and therefore the vitiations alſo which they ſuffer ſhould rather be accounted ſupervening ſymptoms (90.), and ought not to be treated of ſeparately in this place.

Compound Diſeaſes.

413. AND theſe are the whole of the more ſimple affections (125. to 412.), which ſeldom indeed occur ſingly to be treated by the phyſician (123.), but on account of their various combinations, by which they arrive at real diſeaſes, deſerve a principal conſideration.

414. It is called a compound diſeaſe, to conſtitute which various ſimple affections ſo concur as to make one. This, therefore, conſiſts of as many parts as there are ſimple affections from which it ariſes; it is reſolved into theſe; finally, the latter being underſtood, the former is ſo likewiſe; neither can any of them be removed or changed, without the nature of the diſeaſe which they conſtitute being conſequently alienated.

415. Hence there take place in compoſition three different genera, as when there happen three diſtinct vitiations of the ſolids or fluids, or when the latter are complicated with the former. But there are given ſo many ſpecies of each genus, that to enumerate all the poſſible combinations, and explain methodically the diſeaſes ariſing from each, is a thing ſcarce to be effected.

416. Beſides, the natures of diſeaſes are not yet fully enough demonſtrated (44.), ſo that there here remains much matter for diſſenſion and diſpute; hence he will ſcarce be able to acquit himſelf freely who purſues the ſynthetic method only.

417. The order, therefore, which ſeems the fitteſt for treating this ſubject, is properly taken from the more manifeſt part of the morbid ſtate, which is evident to the ſenſes (45. 86. 88.). Thus the diſtinguiſhing characteriſtics, by which divers diſeaſes both agree and differ among themſelves, may be eſtabliſhed in a regular method, alſo their claſſes, genera and ſpecies; ſo that the diagnoſis in practice may be rendered more eaſy, and confuſion and occaſion of cavilling avoided: compound diſeaſes are therefore rather to be conſidered as the concurrence of ſo many different ſymptoms, and, according to the cuſtom of ſyſtematics, are more connected with that ſection of the ſpecial Pathology which treats of the ſymptoms ſingly.

418. There are likewiſe accidental differences of diſeaſes (121.) although they are, for the moſt part, wont to be ſubjoined to the eſſential; as they cannot, however, be fully underſtood in this place, they will be more fitly narrated below, in the following ſections.

Of the Noxious powers.

419. Seeing the poſſible diſeaſes in the human body differ ſo much by nature among themſelves, the ſtrength of thoſe powers from which they ariſe (63.) muſt conſequently be very different. They therefore deſerve to be treated of particularly, that it may be readily known what change every one ſingly is able to effect, when need requires (71. 79.).

420. The ſources from which the noxious powers flow are threefold, as we are preſerved ſound by the due conſpiration of a threefold genus of powers (7.). The mind, body, and external things, have here ſeverally their own ſhares (4. 5. 6.). It is indeed a matter of indifference, whether we uſe this threefold diviſion in treating the ſubject, or, with others, prefer a ſenary or quaternary diſtinction; or rather, with Pitcairn, make a dichotomy, and reduce the whole to the action of external things upon the body, or the action of the body in itſelf. Whatever things relate to this head, phyſicians have been in uſe to denominate non-naturals, or, if we may ſo ſpeak, intermediate powers, which in themſelves are neither natural or unnatural (2.), ſalutary or noxious, but ſuch as may be rendered ſo by their uſe or abuſe. This ambiguity in a technical word, eaſy to be explained, ought to embarraſs nobody (3.).

421. But all theſe (420.) act by either genus both of general and particular powers. It will therefore afford us ſome aſſiſtance to uſe the things demonſtrated in mechanics, phyſics, chemiſtry, and medicine, to inveſtigate and underſtand the effects which they produce.

Of the Noxious Powers of the Atmoſphere.

422. THAT fluid the air, with which we, while living, are ſurrounded, which we reſpire, and take in by deglutition, is every where perpetually in contact with the external and internal ſurface of our body. It behoves us, therefore, to be variouſly affected according to the diverſity of its powers and qualities; eſpecially when it is liable to ſo many and ſo great changes, as is ſhown in experimental philoſophy.

423. A hot air heats to its own temperature the bodies which it ſurrounds or penetrates; rarefies them; relaxes the particles, of which they conſiſt, in their mutual coheſion; excites inteſtine motions; whereever there are volatile parts, it diſſipates them; incites the innate powers to action; raiſes and promotes fermentation and putredity.

424. From theſe (423.) is underſtood what ought to happen to a perſon who is long expoſed to a too great heat of air.

I. In proportion to the very intenſe heat of this ambient medium, by which the body is over-warmed there is a diminution of the native heat, an extinction, and a ſubſtitution of extraneous.

II. By rarefaction the ſolids and fluids are more expanded, the latter indeed in a greater degree than the former; whence plenitude and turgeſcence of the veſſels (390.), and manifold aberrations of the humours (399. *et ſeq.*).

III. Debility of the ſolids, on account of the relaxed coheſion (157.), a ſpongy texture of the fleſh, weakneſs of the articulations, laxity, inertneſs, flexibility (*ibid.*)

IV. For the ſame reaſon there is an attenuation of the more ſpiſſed humours, agitation of the inert, and a freer motion through the veſſels making leſs reſiſtance (II. III.).

V. The vital power (170. 194.), indeed, more ſenſible and acute, but in vigour, tenaciouſneſs, conſequently in duration leſs, is more eaſily diſturbed in its motions, languiſhes and declines in a ſhort continuance of the increaſed heat.

VI. The more tenuous part of the humours, volatile, ſpiritous, aqueous, expoſed to the air, is diſſipated from the pores of the external and internal ſurface of the body. Whence defect of the more ſubtile parts, inſpiſſation of the craſſamentum (274. 275. 282.), immeability, an atrabilarian, inflammatory diatheſis, exſiccation of the ſolid, obſtruction of the minuter veſſels, &c.

VII. Greater agitation, attenuation, and evolution of the ſaline and oleaginous matter, and a diſpoſition to rancidity, induces an alcaleſcency, a brakiſh, aduſt, fœtid quality, a yellow, duſky, blackiſh colour, conſequently putrid, ardent, malignant fevers, thence ariſing; inflammatory and acute diſeaſes, attended with various leſions of functions of the nervous kind.

VIII. The things which are contained in the *primæ viæ*, if they have been diſpoſed to fermentation or putrefaction, are ſooner carried into that ſtate by the heat of the air, and produce ructus, inflation, dolour, and ſpaſms of the ſtomach and inteſtines, anxiety, cholera, diarrhœas, dyſenteries, &c.

IX. Any particular part of the body being more immoderately heated than the reſt, diſturbs the equable circulation, draws the humours that way, admits thoſe that are rarefied into extraneous veſſels, and the vital power being irritated, conceives inordinate agitations of its fibres; whence, infarctions, dolours, redneſs, eryſipelas, inflammation, phrenitis, ophthalmia, angina, peripneumonia, &c.

425. It is therefore manifeſt, that the heat of the atmoſphere is of benefit to aged perſons, to ſuch as are of a torpid, frigid, phlegmatic habit, abounding with ſerous congeſtions, or labouring under a poverty of humours; but, on the other hand, it proves greatly prejudicial to plethoric, obeſe, hot, dry conſtitutions; to thoſe inclined to hæmorrhagy, or an irritable habit, to thoſe who indulge in animal food and ſpiritous liquors, and that are ſubject to various cacochymies; but it is chiefly hurtful to the nervous parts, the lungs, *primæ viæ*, and the bilious ſyſtem, and diſturbs the functions of theſe in various ways.

426. The cold of the atmoſphere condenſes our bodies, and diminiſhes their magnitude, but the ſolids not indeed in the ſame degree as the fluids, which proceeds even to congelation; it renders the ſolids more elaſtic, diminiſhes or ſuſpends the inteſtine motion of the fluids; it, in a greater degree, converts the water, and watery juices, into an icy conſiſtence, which, while produced, rarefying, and becoming lighter, occupies a greater ſpace, and with great efficacy removes the obſtacles which reſiſt expanſion. If the more compound liquors congeal, one part ſeparates from another, the texture is wholly changed, nor can it be always reſtored by recongelation; ſuch parts as have veſſels and juices contained in theſe, eſpecially the ſofter ones of animals and vegetables, conſtricted by froſt, if they are ſuddenly thawed by heat, ſuffering an irreparable diſſolution of their contexture and mixture, are corrupted.

427. If theſe things (426.), generically demonſtrated in experimental philoſophy, are applied to the human body, it follows that, upon a more intenſe cold,

I. The ſolids of the body are contracted, and become rigid, are rendered more brittle (165, III.); increaſed in their ſpecific gravity, the cavities of the veſſels diminiſhed, conſequently leſſened in proportion to the contents, and reſiſtances formed. But the conſtriction will be ſo much the greater, becauſe the ſenſe of cold likewiſe acts by its ſtimulus upon the vital power (171.).

II. The humours are compreſſed, rendered inert, immeable, and prone to ſtagnation.

III. The relation which the containing parts bear to the contents (424. II. 426.) is therefore changed, and, *ceteris paribus*, bodies exhauſted of their juices are reckoned worſe than thoſe that are more full.

IV. Moreover, in the robuſt, and thoſe uſing great animal motion, the mutual action between the ſolids and fluids, and attrition increaſes; the internal heat is augmented, circulation, coction, attenuation, diſſipation, and the neceſſity of repairing the waſte, by the aliment ingeſted, heightened; hence the appetite is ſharpened, and, unleſs it is timeouſly ſatisfied, there ſucceeds debility, *deliquium animi*, or even ſudden death from hunger.

V. On the other hand, in the weak and inactive, on account of the conſtricted veſſels and inſpiſſated humours, the vigour of the circulation is diminiſhed, the native heat and vital power declines, torpor is induced upon all the functions, the humours are not defecated, the evacuations being ſuppreſſed;

hence there is an increaſe of the acrid parts, mucus, and water; from which are produced ſcurvy, rheumatiſm, diſeaſes of the joints, leucophlegmaſia, and dropſies; beſides, the interior parts are overcharged with too great a quantity of humours, when the reſiſtances at the ſurface of the body expoſed to the air immoderately increaſe (411.); hence the functions of the heart, and eſpecially of the lungs and encephalos, are impeded. The congelation penetrating inwards, and becoming irreſoluble, all motion is ſuſpended, and even the blood being accumulated in the lungs, and reſpiration intercepted, ſudden death is induced, or the brain conglaciating, an invincible ſomnolency ſucceeds, by which life is at laſt extinguiſhed.

VI. In the extreme parts of the body, which are leſs defended from cold, the ſmaller veſſels are contracted, the humours inſpiſſated, the pores ſhut, the perſpiration ſuppreſſed; hence, lividities, efflorefcences, tumours, itchings, child-blains, ulcers, are produced; or, being penetrated with the congealing cold, ſenſe and motion ſuffocated, gangrene, ſphacelus, and, from an imprudent calefaction, putridity (426.) is induced in place of a cure.

VII. The cavity of the noſe, fauces, and *trachea arteria*, through which the breath paſſes, ſuffer like injuries; hence laborious breathing, coryza, angina, hoarſeneſs, cough, &c. are induced.

VIII. The lungs eſpecially, as by a very extenſive ſurface they freely admit the contact of the reſpired air, are conſtringed, perſpire leſs, accumulate pituite, are obſtructed, inflamed by the impaction of the blood, dried and choaked up. Whence difficulty of breathing, cough, catarrh, excretions of mucus,

cus, and pus, gangrene, ſphacelus, and ſudden death.

IX. Both bodies in general, and parts, are eſpecially badly affected, in which the vital power is more weak, more irritable than is proper, the circulation more languid, the native heat faint, the ſenſes and motions torpid, or in which there is too much agility of theſe, a tenderneſs of the fibrous contexture, or an exceſſive rigidity, paucity of humours, or an aqueous, glutinous, terreous, frigid, vapid inertneſs of theſe.

428. Theſe things being duly conſidered, it is not difficult to render a reaſon, why cold is hurtful to the bones, teeth, nerves, encephalos, and ſpinal marrow; why to the aged, and thoſe accuſtomed to a warmer climate; why it cauſes pain in ulcers, hardens the ſkin, produces inflammation, which does not diſcharge pus, excites convulſions, tetanus, lividity, and febrile ſhiverings. It is likewiſe evident wherefore ſudden changes of heat and cold are ſo prejudicial to thoſe that are incautious, and that are unaccuſtomed to ſuch viciſſitudes.

429. A moiſt air, charged with much water, leſs efficacious by its proper gravity and weight, ſuffocates rather than propagates, the impreſſed motions, and received ſenſible qualities; it is leſs fit to receive, abſorb, and diſſipate new vapours from the bodies which it ſurrounds; theſe it rather moiſtens, fills with an inſinuated humour, relaxes, ſoftens, reſolves, and drenches; it eſpecially promotes corruption and putridity, when aſſiſted by heat; if cold at the ſame time, it is leſs eaſily rendered warm, and is more frigid to ſenſe.

430. It is therefore evident, that, when a perſon continues long in a moiſt atmoſphere,

I. The ſurface of the body is leſs compreſſed; hence the coats of the veſſels are partly deprived of their ſupport, nor can they act with due force upon the contained humours.

II. The humours are too much diluted by the aqueous influx· conſequently there is produced a ſerous congeſtion, and the evils ſucceeding in conſequence thereof (287.).

III. The ſolids thus moiſtened are rendered lax, and become flaccid and inert.

IV. The vital circulation through the whole body, paſſage of the blood through the lungs, attrition, heat, coction, and nutrition, grow torpid; the body is indeed repleniſhed, but not ſtrengthened.

V. The perſpiration is ſuppreſſed, eſpecially the pulmonary; from whence increaſe of the ſerous congeſtion (II.), infarction of the pulmonary veſſels, cough, peripneumonia notha, the excretion by ſputation, urine, and the belly more copious, ſtagnation of the aqueous juice in the cellular membrane and cavities, lentor, and an acrid corruption, torpor of the body overcharged, fever, rheumatiſm, cachexy, &c.

VI. The acuteneſs of the ſenſes is blunted, animal motion languiſhes, the nervous ſyſtem is weakened, the vital power diminiſhed (298. III. IV.), whence inertneſs of all the functions.

VII. If cold has been joined with the moiſture, the effects juſt now enumerated are produced in a greater degree, are with more difficulty overcome, conſequently the whole vigour of nature declines.

VIII. On the other hand, if great heat has acceded, the higheſt degree of laxity is induced, the pores are opened, the humours exhaled, attenuated, admitted into extraneous veſſels; wherever an outlet is afforded they are effuſed, or even thoſe retained are more diſpoſed to putridity: Whence diſtenſion of the external habit, enormous ſweating, inanition of the interior parts, declenſion of the ſtrength, putrid, contagious, peſtilential diſeaſes.

IX. The uſe of moiſt air is therefore exceedingly prejudicial to tender conſtitutions, to the more delicate ſex, a cold, humid temperament, lax bodies abounding with water and mucus.

431. The air offending by dryneſs ought of neceſſity to produce the oppoſite effects; becauſe being very fit for abſorbing humidity, it dries our bodies, though it corroborates them by exſiccation; it renders them, however, ſapleſs and rigid, and, by depriving the humours of their more tenuous parts, induces a morbid, inflammatory, atrabilarian ſpiſſitude upon theſe, (282. 284. III. IV. VI. VII.). In compariſon of the reſt, however, that quality of the air is reckoned more favourable to either conſtitution of body, and very ſalutary, if an exceſs of heat is wanting.

432. The air, where it poſſeſſes gravity, is powerful in compreſſing and condenſing the bodies which it ſurrounds, and the effects are greater in proportion to the degree of gravity; it likewiſe confines that elaſtic matter which is contained in the fluids, extricating itſelf under a ſmall preſſure of the atmoſphere. But it appears from the barometer, that a groſſer air, which is more moiſt, commonly gravitates leſs; on the other hand, a more ſerene in a greater degree: and that there are perpetual and great changes of this property in our atmoſphere, in ſo much, that the difference between the higheſt and loweſt degree is equal to a tenth part.

433. Hence the atmoſphere, where it ſurrounds and penetrates the human body, preſſes it equally in every point in the manner of fluids, ſuſtains and corroborates the ſolids, applies the containing parts cloſe to the contents, aſſiſts the mutual action between theſe and their attrition, preſerves the diameters of the veſſels, and confines the humours, that they may not ſuffer aberration. The vital function of circulation, reſpiration, the native heat and health, under the due equilibrity of theſe powers, continue briſk.

434. The preſſure of the air increaſed indeed by natural cauſes, if it acts equally, is eaſily borne, and even increaſes the natural ſtrength; but, if directed with greater force upon a particular part, it may prove hurtful, by compreſſing and ſtraitening the veſſels, ſqueezing out the humours, and determining them into parts that are under leſs preſſure. When that happens in a more conſiderable degree to the lungs, their veſſels being compreſſed, and the reſiſtance to the heart increaſed, the paſſage of the blood is impeded and ſuffocated, and other parts are overburdened with the retained humours, not without a complicated miſchief.

435. The effects of a diminiſhed gravity are more pernicious; for it relaxes the ſolids deprived of their ſupport, rarefies the humours by the elaſtic matter being extricated, cauſes repletion of the veſſels, dilates and debilitates them; hence it produces tumours, eruptions, and aberrations of the humours, weakens the circulation, and enervates the powers performing animal motion; but it principally obſtructs the action of the lungs: From whence proceeds a laborious breathing, not ſatisfying, from

the blood accumulated, peripneumony, hæmoptœ, &c.

436. From hence it is remarked that lighter, warmer, moiſter airs agree with one another in many of their effects (424. 429. 435.); likewiſe, ſuch as are heavy, frigid, and dry, (427. 431. 434.); and conſequently, according to the diverſe concurrence of theſe qualities, the miſchiefs thence ariſing can be much heightened or mitigated, and likewiſe averted. Nor is the effect of a too rare or denſe air, or one more or leſs elaſtic than is proper, diſſimilar.

437. But ſeeing the gravity of the atmoſphere in places of different altitude, or even in the ſame place at different times, much varies, the preſſure of our bodies therefore, proportioned to this, muſt likewiſe be very various. Is it readily underſtood why great and ſudden changes of this property are ſo intolerable to thoſe that are unaccuſtomed to them? Why it is ſo very dangerous to the debilitated, the more irritable, and whoſe humours are eaſily ſuſceptible of rarefaction? Why ſo troubleſome to thoſe who have pectoral complaints? Why the barometer prognoſticates approaching relief, or uneaſineſs to aſthmatics?

438. There is not, however, a more deadly vitiation than that which the air contracts by a long ſtagnation in places that are cloſe confined, ſuch as wells and caverns, and not renewed by ventilation. For putrefying, as it were, by the torpor, what was formerly the food of life becomes an active poiſon, and is of all things the moſt pernicious.

439. Nor is the corruption which the air undergoes different; where always the ſame, and not renewed, it ſtagnates around the body, and is much

uſed in reſpiration, eſpecially if it is circumfuſed for the uſe of a number of perſons. For whether upon inſpiration it loſes ſomething which it cannot recover, unleſs by mixture with freſh air, or is infected with vapours received from the living body; or finally, whether it contracts ſome rottenneſs by its own inertneſs; it appears from the moſt evident obſervations, that in priſons, camps, hoſpitals, ſhips, or in any other habitation of a multitude of people not properly ventilated, there is produced from that cauſe alone a virus in the air, from which ariſe fevers of the worſt kind, putrid, malignant, and attended with exanthemata, ſuddenly mortal, and likewiſe ſpreading by contagion. But ſeeing theſe diſcover by many marks a putreſcency induced upon the humours (312. to 314.), they likewiſe ſeem clearly to evidence the ſeptic quality of the air thus corrupted in whatſoever way contracted.

440. Whoever further conſiders, that there are perpetually received into, and diffuſed through the atmoſphere, numberleſs effluvia ariſing from all ſorts of bodies, and more ſubtile particles, which, by ſome means rendered volatile and multifariouſly mixed, ſeparated or united, every one, according to its nature, have different ways of acting and fixing themſelves in human bodies, which float in the air, and enter with it; he will eaſily ſee that innumerable principles and cauſes of diſeaſes flow from this ſource, which any one will in vain attempt to deduce from the air itſelf, or from its common properties, and endeavour to detect and explain by meteorological obſervations only.

441. For which reaſon it will be exceedingly difficult to give a complete pathological hiſtory of the air, which may enumerate exactly all and every

noxious quality which it poſſibly can contract, and be able to apply it to all the particular conſtitutions in every place and ſeaſon, eſpecially as, by the number and frequency of the occaſional cauſes, both its properties and contents muſt neceſſarily be changed.

442. Celeſtial bodies, meteors, climates, ſeaſons of the year, diverſity of ſoils, mountains, ſeas, lakes, marſhes, rivers, vegetables, animals, ſubterraneous caverns, the number of the inhabitants of a place, manner of life, aliments, drink, fuel of the fire, employments, arts, commerce, and many other things, all contribute their ſhare.

443. But the chief and moſt remarkable circumſtance in varying the effects of the air, and conſequently the manifold modes of acting upon the human body, is the winds. They, driven by their own impetus, urge and compreſs more forcibly, as if the gravity of the air had increaſed (433. 434.): Moreover, they apply a greater quantity of air to the body in a given time, by which it for the moſt part happens, that both the common qualities of the atmoſphere, and the extraneous matters it contains, each of them, according to their powers, operate more efficaciouſly. They likewiſe renew the air as well as water, and do not ſuffer them to be corrupted by torpor (438. 439.). Beſides, by their agitation, they mix various regions of the air with each other: hence they ſubſtitute ſome qualities for others, and temperate thoſe of an oppoſite nature by their mutual admixture; they likewiſe change, dilute, diffuſe, and diſtribute their contents more equably, and communicate with one another with a various effect. They eſpecially transfer from one place to another vapours, effluvia and miaſmata, and

thus either purify or contaminate. Nor is there almoſt any other natural power given, which, as itſelf is often very variable, induces ſo great and univerſal changes with ſuch celerity.

444. From theſe indeed (443.) we may ſee, in general, how much good and evil winds can bring upon the body. But that it may be known what every wind in particular can effect, it is not enough to dwell upon theſe in general, when the ſame may be ſalutary or noxious in different places and ſeaſons. The different ſtate of the air (442.) in the places from whence they blow, through which they are carried, in what direction, the various duration, ſucceſſion, and the like circumſtances of the ſame, are wont to excite very different and even oppoſite effects: So that the more limited queſtion cannot be with any degree of certainty ſolved, unleſs theſe are at the ſame time conſidered.

445. Seeing therefore the difference of the atmoſpheric air is ſo great in different regions of the habitable world, and a far greater number of deviations from the perfectly ſalutary ſtate every-where perpetually obtains,—it would ſeem that innumerable diſeaſes neceſſarily behove to flow from this ſource alone. It is indeed very ſurpriſing, that men, however, both live every-where and enjoy health; and even in a bad air there are examples of longevity, and of health protracted to a very old age. Our bodies, doubtleſs, by nativity and cuſtom, are inured not only to bear with impunity a malignant air, but, when once accuſtomed to it, endure it better than one comparatively more ſalutary, to which they have not been accuſtomed. The inconſtancy and frequent variations of the air itſelf often prove the

means by which a noxious power is blunted. In fine, we with much difficulty reſiſt great and ſudden changes. Nature has, laſtly, given temperaments ſuitable to every climate, by which whatever the air has noxious in an intolerable degree is in ſome meaſure mitigated.

The Injuries from Meat and Drink.

446. THE manifeſt nouriſhment of life and health conſiſts in things that are eſculent and potable, which are therefore, not leſs than the air, reckoned among things neceſſary. The worſt and exceedingly manifold abuſes are however of the beſt things, from whence very many occaſional cauſes of diſeaſes ariſe. They deſerve therefore a particular conſideration.

447. Obſervation indeed teaches us, that a wonderful variety in food can be taken and ſuſtained by the human race; ſo that we would be almoſt ready to conclude, that there is nothing very certain or ſtable which might diſcriminate the uſe or abuſe. The hardy conſtitutions of ſome are injured almoſt by no exceſs. Others are hardened by cuſtom. A frequent relapſe into oppoſite extremes are beneficial to ſome. Theſe things, ſeeing they only pertain to a few, by no means remove the conſequences which are wont to happen to the greateſt part from abuſe.

448. A greater quantity of aliments, every day ingeſted, although they do not exceed the coctric powers, notwithſtanding they induce voracity by habit; and unleſs there intervenes a laborious manner of life, it overloads by the increaſing redundance of chyle, fæces, fat (394.), blood (388.),

and all the humours (385.), and at length proves hurtful.

449. So great is this, that it becomes a burden, and cannot be rightly digeſted, the powers of the alimentary canal being broken, the afflux and action of the digeſtive menſtrua impeded, conſequently concoction diſordered, breeds crudities, and ſpontaneous corruptions of the ingeſta; hence various vitiations of the chyle (325. to 330.), and the innumerable evils which are produced from every one of theſe, as well in the *primæ viæ* as in the reſt of the body, eſpecially various cacochymies (283. 284. 288. 307. to 321.), and the depravities of nutrition.

450. But if the ſtomach is ſo diſtended with an enormous load, that its orifices are ſhut by a ſpaſm induced, the fibres being diſtracted, the veſſels ſtraitened, motion ſuppreſſed, the afflux of the humours reſtrained, contrition, mixtion, ſolution, dilution, and expulſion is prohibited, the neighbouring parts being preſſed and irritated, dyſpnœa is produced, anxiety, a perverted circulation of the humours, an improperly directed impetus, the conſent with the encephalos excited, cephalalgia, vertigo, hebetude of the ſenſes, apoplexy; or even cardialgia, nauſea, dry vomiting, and, in a very few examples, rupture of the œſophagus or ſtomach, unleſs the oppreſſing matter, by a relaxation of either orifice, is ejected by vomiting, or in a crude ſtate carried into the inteſtines, and, the belly being moved, at length paſſes off.

451. But repletion from meat is much more hurtful than from drink, as what happens ſlowly and gradually, is more tolerable than that which is ſuddenly.

452. A ſmaller quantity of the ingeſta than the nature of life and health requires, through defect of the neceſſary refection, induces languor upon the functions, diminiſhes the quantity of humours, conſumes the fat, emaciates, extenuates, and refrigerates the body, contracts the ſtomach and inteſtines, ſo that they uneaſily afterwards bear more aliment; but there ariſes uneaſineſs, pain, nauſea, vomiting; ſo that the neceſſity of ſpare meals at laſt becomes indiſpenſible, and an abſtinence from that quantity which nature requires.

453. But a total abſtinence from meat and drink, if it is long ſuſtained, the menſtrual fluids, which flow into the laboratory of the firſt digeſtion, not being duly mixed, diluted and temperated with the new ingeſta, according to their natural diſpoſition, become very acrid: Whence a fœtid breath, great appetency, even impelling to the greateſt cruelty, ructus, borborygmi, nauſea, vomiting of acrid, ſaline, bilious, putrid matter, deliquium animi, great thirſt, dryneſs, debility ſucceeding the hunger at laſt proſtrated. But when there is no bland chyle conveyed into the interior parts, and in the mean time, however, the functions of life continue; from the detrition of the ſolids, not refected, diſſipation of the more tenuous part of the humours, which is not repaired, the veſſels muſt neceſſarily be emptied, the circulation become weak, and the ſtrength of the body decline with the decreaſe of bulk: Hence lightneſs in proportion to the bodily ſtature, a weak pulſe, decreaſe of the native heat, a meagre leanneſs, dryneſs, and a bibulous conſtitution of body. Finally, there ſucceeds, through defect of mild nutriment, and a continual attrition, the higheſt acrimony of the ſaline and oleaginous parts in

the humours, volatile, putrid, rancid, and peſtiferous; from which ariſe ſpaſms, convulſions, acute fevers, attended with raging fury, and death.

454. Theſe indeed are ſeverer (452. 453.), and kill ſooner, if the belly is deprived of both meat and drink at the ſame time: The want of meat is in ſome meaſure ſupplied by drink. And the more intenſe the circulation of the humours, the ſtronger the animal motion, the more augmented the heat, and the more copious the excretion and diſſipation, the injuries from hunger are ſo much the more grievous.

455. It is evident, therefore, that too much abſtinence is even more hurtful than too much repletion, and that there is a greater error in a ſpare diet, than in one a little more full. Is it not likewiſe apparent, why old people very eaſily bear hunger; next to them perſons of a mature age; youths by no means well, and children leaſt of all; and among theſe, thoſe who have been more ſprightly at that age? Wherefore animals ſleeping in the winter continue to live without food? Why the ſick ſuſtain want longer than the ſound? Why the lean better than thoſe abounding with humours? What the cauſe of ſudden emaciation in acute diſeaſes? Why peſtilence the conſequence of famine?

456. Health does not require the mutual proportion of ſolid meat and drink ſo exactly proportioned, that they who properly uſe theſe very differently may not continue ſound. Reaſon likewiſe convinces us that the ſame proportion does not agree with every age, ſex, temperament, manner of life, ſeaſon, climate, &c.—It ſeems, however, that a greater exceſs of either might prove hurtful, if, incongruous with the con-

ditions of the body, it is long continued. The more abundant uſe of drink ſhould induce an aqueous tenuity (287.) upon the humours, immoderately increaſe the urine, perſpiration, and ſweats, and defraud the body of its nutriment by a part of the uſeful matter being thus likewiſe eluted; or to debilitate and render torpid by the water being retained, to create various ſpecies of dropſy (*ibid.*). On the other hand, when aliments, not liquid of themſelves, are too ſparingly moiſtened with drink, and the temperament of the perſon not of the more moiſt kind, the ſtomach burdened with a ſpiſſed maſs hardly digeſts, ſlowly expels, delivers a coarſer maſs to the inteſtines, and which ſcarcely moveable through theſe, inviſcated with a greater quantity of their mucus, infarcts them with much ſpiſſed, dry, ſtagnating fæces, commits to the lacteals a groſſer chyle, more ſparing in quantity; whence obſtructions of the meſentery, a glutinous, denſe, atrabilarian blood; other humours in like manner; a greater acrity of the ſalt undiluted; a more difficult ſeparation and expulſion of the excrements; various cacochymies; infarction of the viſcera, and many other morbid effects, which are the conſequences of a defect of water. (Conf. 166. 167. 198. 282. 285.).

457. So different in quality are the ſubſtances with which the life of the human race is ſuſtained, that it would almoſt ſeem, that any kind might be uſed, provided we be in health, that every thing is wholeſome to the ſound, and that the palate may be indulged with impunity, if we do not err in reſpect of quantity.—Luxury, however, invites many, and want obliges others, to take things that are hurtful, even when uſed moderately.—There

are likewiſe ſome, which hurt only thoſe that are unaccuſtomed to them.—Others there are whoſe more ſparing uſe is innocent, but which conſtantly taken prove hurtful: But, in fine, the vaſt difference of mankind among themſelves, which the latitude of health comprehends, as it does not ſuppoſe the digeſtive powers equally ſtrong in individuals, ſo one requires one kind of food, another another kind, as is moſt agreeable to their natures. We may obſerve this in milk, which nature has intended for infants. It will therefore give ſome aſſiſtance in explaining particularly the various evils which flow from this ſource.

458. Viſcidity abounding in the food, if not ſubdued by a vigorous ſtrength of nature, produces a too glutinous chyle, and the innumerable evils above enumerated (285. 329.), which in conſequence thereof enſue. Accumulations in the lungs, glandular tumours, infarctions of the cellular texture, inertneſs of the biliary ſyſtem, languor of the nervous functions, torpor of the vital power (196. 198.), are almoſt the principal, when a gluten, carried from the *primae viae*, deluges the whole maſs of humours (283.). Whenever an acrimony is joined with the gluten, which aliments either manifeſtly contain, or contract by means of an induced corruption; for example, from vegetables, an acidity (307.) and acerbity (309.); from animals putreſcency (312. 313.); from pinguid ſubſtances rancidity (375.). Thus acrid rheums may be produced, each remarkable by its different effects.

459. The abuſe of pinguid ſubſtances, although bland, lubricates, relaxes, and debilitates the *primæ viæ*, affords a chyle loaded with too much cream, which, being likewiſe leſs ſubacted, eaſily ſeparates (331.).

Whence a burdenſome obeſity (394.); but, if the action of the digeſtive powers has been at the ſame time more torpid, the mucus (376.) naturally reſiding in eſculent fats, eaſily degenerates into viſcidity (458.), and diffuſes a ſluggiſh phlegm through the whole body. From either cauſe, there is debility of the ſolids (162.), and torpor (198.). Beſides, an entire oleaginous part impacted in the ſmaller veſſels denies an entrance and paſſage to the watery humours; and, in this way, creates obſtructions and impediments of ſecretion and excretion.

460. The ſame things prove more effectually hurtful, if either, by a ſpontaneous corruption, the culinary preparation, or a fault in digeſtion, they are changed from their native blandneſs into an acrid ſtate (328.); eſpecially, if the rancidity of the *primæ viæ,* by the daily abuſe admitted into the ſecond paſſages, has infected the fat of the body (375.). Whence an acrid, atrabilarian, ſcorbutic cacochymy of the worſt kind, ſcarcely to be corrected, which diſpoſes to inflammation, exanthemata, eryſipelas, herpes, malignant ulcers, cancers, gangrenes, ſphacelus, and caries.

461. Many of thoſe things which we ingeſt, eſpecially of the number of vegetables, contain a manifeſt acid, in a more latent ſtate, capable of being evolved. If this is not ſubdued by a vigorous digeſtive power, or, from its own cauſes extricated, it is more exalted (307.), it infects the chyle, the menſtrua of firſt digeſtion, laſtly, the blood and other humours, with an acor, which every-where proves many ways hurtful (308. 325.).

462. The morbid effects of an auſtere acid, which principally reſides in unripe fruits, appear from (309. 320. 326. 376.).

463. The more ſubtile acid, which reſiding in theſe fermented, more or leſs acrid and manifeſt, joined with a very volatile ſpirit, diffuſing itſelf through the whole maſs of humours, when, by the too free uſe, it eludes the coctric powers, the irritating, eroding, and reſolving acrimony, divers ways concreting with the earth (320. 371. 372. 379.), being carried into the lymph, produces pains, ſpaſms, conſtrictions of the veſſels, ſtagnation of the humours, catarrhs, rheumatiſms, gout, calculi, and the like.

464. What miſchief alcaleſcent acrimonies largely ingeſted, under the denomination of meat, drink, and condiments, may induce, is evident from (310. 311.).

465. What may be ſaid in this place concerning the noxious acrimony of ſalt meats, ſeems to be already explained (315. 316.).

466. The fiery power of aromatics, quite foreign to the nature of aliment, inherent in the acrid oil, ſalt, and predominant ſpirit, ſcarce domable by human nature, injures the ſound by its pungent ſtimulus, pretty tenacious and retentive of the fat, difficult to be abſterged. It therefore produces, in the *primæ viæ*, thirſt, cardialgia, heat of the ſtomach, rancidity of the pinguid ſubſtances at the ſame time ingeſted, nauſea, ructus, and vomiting; exaſperates the bile; inflames the inteſtines; calefies the humours, and heightens their motion in the ſecond paſſages; diſſipates the more ſubtile; liquifies the fat; exalts the ſalts; attenuates the blood by the alcaleſcent acrimony (310. 311.), and dries the body. Hence are produced ſiccity, emaciation, ardent fevers, contractions, ſpaſms, exanthemata,

mata, inflammations, arthritic pains, and many other diſeaſes.

467. The ſpiritous acrimony produced from fermentation, which is contained in wines, old ales, eſpecially the more meracious, ardent ſpirits extracted from theſe, or the like, by fire, ſimple or differently compound, is the moſt remarkable of this kind in a good or bad intention, peculiar by the efficacy proper to it, and likewiſe more nocent by the abuſe, by which it penetrates more deeply, and, by the diluent vehicle being let through all the emunctories of the body, fixes itſelf in a more pure ſtate in the humours and ſolids. It acts by condenſing and inſpiſſating the fluids, conſtringing the firm parts, ſtimulating the fibres, by exciting the vital and ſentient powers and animal impetus, and forcing them into diſturbances. It therefore neceſſarily follows, that thirſt is induced by immoderate drinking, intoxication, an accelerated circulation, increaſed heat, rarefaction of the humours, diſſipation of the more ſubtile part, coagulation of the humours, an inflammatory diatheſis of the blood (367.), conſtriction of the veſſels, dilatation, rupture, aberrations (397. *et ſeq.*), obſtructions, inflammations; alſo enormous, weakening, enfeebling vibrations of the nervous ſyſtem, a too great determination of the humours to the ſuperior parts; hence diſorder and oppletion of the encephalos; finally, the ſtimulus being ſuppreſſed, and the impetus allayed, there muſt neceſſarily enſue a ſubſidency of the humours, collapſe of the veſſels, torpor of circulation, cold, exhauſted ſtrength, languor of all the functions, and all things contrary to the preceding.

468. To any one rightly conſidering theſe things, the nature of what is daily obſerved to happen to

drinkers, cannot be obſcure. Why drinking a-new relieves the ſickneſs occaſioned from a preceding debauch? Why this abuſe, from daily cuſtom, at laſt becomes neceſſary, and ſeldom or never can be laid aſide, but, increaſing by degrees from gentler cravings, at laſt arrives to the ſtrongeſt deſire? Wherefore it is ſo much more pernicious to younger perſons than to thoſe advanced in life? Wherefore it weakens the laboratory of firſt digeſtion, that all deſire of food being taken away, we are at laſt ſupported by drink alone? Why it changes the humours, conſtantly ſupplied by ſo great a quantity of ſpirits, into vapid fluids? Whence cachexy, emaciation, leucophlegmaſia, and dropſy in hard drinkers? Whence redneſs of the eyes, exanthemata of the face? Why are they prone to acute, inflammatory diſeaſes, and fall into theſe the moſt dangerous? Why tremors, paralyſis, apoplexy, and every other diſorder of the ſenſes and motions, are ſo often experienced?—Is the gout and calculus likewiſe owing to this acrimony?

469. From the ſame origin, but of a different nature, proceeds that acrimony called *Gas Helmontium*, which engendered by a ſtrong vinous fermentation, muſt affect thoſe who ſuddenly ſwallow a great quantity of very fermentable liquors, or ſuch as are already in a ſtate of fermentation. This acrimony, attended with a very ſtrong elaſtic power, not only by its ſtimulus, but likewiſe by its expanſion, proves hurtful; hence it creates ructus, ſpaſms of the ſtomach and inteſtines, inflations, great anxieties, vomiting, cholera, diarrhœa, dyſentery, ilius, &c. Theſe, however, are the ſlighter effects, if we conſider many inſtances of perſons, who, upon reſpiring the air infected with this vapour, have been ſtruck with ſudden death.

470. Confections, ſweet-meats, condiments, and other things of that ſort, immoderately uſed, by means of their occult acrimony, are deſtructive to the teeth; according to their fermenting power, they generate an acid, and the evils which flow from it (461.); they beſides reſolve and attenuate the humours (288.), and the denſity of theſe being diminiſhed, they relax the firm parts; hence they are pernicious to the nervous functions, not of one ſort only; they are injurious to infants, the more delicate ſex, the debilitated, hyſteric, and hypochondriac.

471. The flatulency which is evolved from potherbs, pulſe, roots, different eſculent fruits, and the like, for a long time, and copiouſly ingeſted, without others interpoſed, by heat, the action of the digeſtive menſtrua, and fermentation, &c. if not ſubdued by the ſtrength of the concoctive power, creates ructus, flatus, borborygmi, and cholic pains; enervates the fibres of the *primæ viæ* by diſtracting them, excites them into ſpaſms by irritating, and perverts the ordinary motions; whence crudities of the aliment, diaphthora, and impeded defecation, a ſmall and weak nouriſhment, and decay of ſtrength.

472. The earthy principle abounding in things ingeſted, whether it has been imbued with an acid (462.), or mixed with a viſcidity (458.) or unctuous ſubſtance (459.), unleſs it is conquered by the animal motion, and diluted with much drink, proves a burden to the *primæ viæ*, produces dyſpepſia (456.), by the quantity and dryneſs of the fæces, infarcts the abdomen, renders the belly conſtipate, and produces painful, bleeding, hæmorrhoidal tumours; the proportion of this element being likewiſe increaſed in the blood, by means of a too

earthy chyle in the other humours, likewiſe in the firm parts, occaſions a too great coheſion, ſtagnation, inertneſs (142.), rigidity (166.), torpor (198. IV.), ſpiſſitude (284.), various concretions (320.), obſtructions (209. VIII.), and innumerable evils which flow from thence.

473. Sauces, ſoups, and other highly nutritious things, ſeeing they nouriſh too copiouſly, prove hurtful to ſuch bodies as are little exerciſed, by inducing plethora (388.); they increaſe the quantity of fat, not without moleſtation, and when chiefly obtained from particular parts of animals, from the vitiation of redundance they at length introduce an acrid, putrid (313. 327.), rancid (328. 375.), viſcid (329. 458.), cacochymy.

474. The exceſs of water in the food, which drinkers admit warm, by an abuſe too common now-a-days, is eſpecially hurtful. The viſcera of firſt digeſtion deluged with this drink are relaxed and weakened, the ſalts of the menſtrua, too much diluted, are enervated, anorexy and apepſia are produced: Beſides, the mucus (373.), with which the parts are lined, is abſterged; whence the moſt acute ſenſibility of the naked coats, pains, ſpaſms, inability to act upon the food, a neceſſity of abſtinence, &c. The more aqueous chyle, introduced into the circulatory ſyſtem, diffuſes a watery tenuity (287.) through all the humours, induces paleneſs upon the blood (363.), and a ſerous congeſtion over the whole body (354. 359.): Whence a depraved nutrition, debility of the ſolids (162.), tenerity of the fleſhy fibres, impotency of the nerves, torpor of the vital power (196.), the ſenſes, motions, and circulation, cold and various ſpecies of dropſy from the ſtagnating aqueous lentor; but the

ſame being directed to the emunctories, occaſions a relaxation of theſe, an increaſed excretion, eſpecially by the kidneys, diabetes, fluor albus, thirſt, defect of nutrition, decay of ſtrength, emaciation, extenuation of the body, conſumption, and the like.

475. If the things ingeſted, although ſalutary, are immoderately hot, the paſſages through which they are carried, ſuch as the fauces, larynx, œſophagus, and the ſtomach, into which they deſcend, muſt neceſſarily be affected with too much heat, burnt, ſhrivelled, inflamed, and excoriated; hence are produced pains, ſpaſms, dryneſs, induration, abſceſs, ulcer, fungus, ſchirrus, and cancer in theſe parts. From which ſource flow various leſions of deglutition, reſpiration, ſpeaking, and digeſtion; but eſpecially the terrible ſpecies of angina from a ſtraitneſs of the œſophagus, which, by an impeded deſcent of the aliment into the ſtomach, perſecutes the miſerable patients, exhauſted with hunger and thirſt, with a fate ſcarce to be lamented. Does the abuſe of hot wine (467.) likewiſe favour this evil?

476. The miſchiefs occaſioned by the oppoſite exceſs are no leſs, nor much different. Things immoderately frigid, when they touch the internal parts, conſtantly warmed by the native heat, by irritating their fibres, conſtringing the pores, ſtraitening the veſſels, coagulating the humours, cauſe pains, ſpaſms, obſtructions, inflammations, and various impediments of circulation, ſecretion, and excretion, as well in theſe parts themſelves as in others by conſent; whence are ſo often produced from this cauſe anginas, pleuriſies, inflammations of the ſtomach, diaphragm, liver, &c. cholic pains, dropſy, and other evils; and always the more certain-

ly happen the more the body was heated but a little before. It is therefore evident, how imprudently they judge for themſelves, who, while they are warm with the heat of the air, fire, motion, a full meal, wines, condiments, count it delicious to take refrigeration by conglaciated meats and drinks: For the chill and nipping frigidity which ice poſſeſſes, greatly increaſes the miſchiefs of cold and the ſudden change (428.), heavy enough of themſelves.

477. Thoſe who, through voracity, omit to manducate ſolid and more tenacious meats, before deglutition, commit a greater taſk to the ſtomach than nature has impoſed. Hence a leſs expedite action of the menſtrua upon the unſoftened morſels, no ſubaction of the pinguid ſubſtances, a more difficult extraction of the juice, ſlower digeſtion, a more tardy expulſion from the ſtomach, and more of others left, which a longer delay differently corrupts, in their turn about to corrupt freſh food: Whence various vitiations of the chyle (323. to 331.), weight in the *primæ viæ*, nidification of worms, accumulated fæces cohering more tenaciouſly, hardly moveable, and conſequently longer ſtagnating. Theſe, however, happen more commonly to the debilitated and ſlothful than to the robuſt, and thoſe who uſe exerciſe.

478. Finally, there may be an error in the times of eating and drinking. Nature, indeed, has appointed hunger and thirſt to indicate theſe, as well as to determine the quantity: But there are many things in common life which require from a perſon, not wholly devoted to the belly, ſomething more limited and uniform than the natural ſtimulus can give. Such, therefore, is the ductility of

the human œconomy, that it allows itſelf to be governed by different laws, and, when accuſtomed, conforms to eſtabliſhed rules, but does not, however, bear the ſlighter deviations from theſe with much difficulty. So that we can eaſily enough take food at very different intervals. They nevertheleſs injure themſelves whoſe attention is conſtantly engroſſed with eating and drinking, ſo as never to allow relaxation to a full belly: For, if the digeſtion is good, the vitiation, in reſpect of quantity, however, occurs (448.); but, for the moſt part, as the viſcera are fatigued with the uninterrupted labour, ſo they digeſt ſlowly and imperfectly; whence various degeneracies of the chyle, and the conſequences of theſe cacochymy, and cachexy (449.).

479. And theſe are the principal heads of this doctrine, whence it may be underſtood what is noxious in the more uſual manner of dieting. There are indeed, through the neceſſity of taking meat and drink, many things ſometimes ingeſted by mankind, that are ſingular, crude, uncommon, ſpoiled, corrupted, poiſoned, not alible, ατοπα, *i. e.* abſurd, which injure every one in their own particular, but very different manner. To this ſome are compelled by want, others by a depraved appetite, from pregnancy or diſeaſe, luxury or avarice. Sometimes an injudicious choice, a neglected preparation, improper preſervation, accident, the arts of wicked people, or an unfavourable conſtitution of the air, induce a vitiation upon proviſions in other reſpects ſalutary, by which they may equal a morbiferous, and even virulent quality. Seeing theſe, however, are both too many and ſpecial, it ſeems foreign to my deſign to explain them in this place.

Of

Of the unſeaſonable uſe of Remedies.

480. SEEING medicaments reſtore health to the ſick, they ought to be endowed with the power of changing the morbid conditions of the body into the ſound (29. 42. 43.). In this, therefore, they differ from aliments, which it is proper ſhould be changed into the nature of the body, that they may preſerve it by nutrition.

481. Remedies, therefore, pertain to things not neceſſary to the ſound, who, as ſuch, ought to be preſerved, and not to be changed. Wherefore the uſe of thoſe things, which we can advantageouſly be without while ſound, are not only ſuperfluous, but detrimental; for it is improper to ingeſt any thing that may occaſion a change; inert things therefore paſs through the body, or, ſubdued by the ſtrength of nature, are converted into aliment; but, if they act by their own powers, there is likewiſe danger, leſt they create diſeaſe, by changing that which is ſound.

482. Neither is it an objection, that there obtain various degrees of health, ſome of which are more imperfect, and ſuch as may be accounted diſeaſe, which require the aſſiſtance of medicine to be well. For it is not in the power of art to render all the differences of health which nature has conſtituted equal, and what can be done in this way is better acquired by a conſentaneous manner of living than from medicaments.

483. The ſame thing may be ſaid concerning the prophylaxis, which, if it is conſtantly procured from remedies, eſpecially (as is ſometimes the caſe)

the more powerful, it is often converted into the foundation of diſeaſes.

484. For the moſt part, therefore, this abuſe is hurtful to the ſound, by laying out the reſources of diſeaſe upon a good ſtate of health, by inducing a habit upon the mind as well as upon the body, by which they are at length rendered neceſſary, by infecting the juices with heterogeneous particles, not capable of being aſſimilated, by ſtimulating and fatiguing the parts with an unnatural force, diſturbing the regular motions of nature, and increaſing her work, the matter ingeſted not being alible. To theſe if we add beſides the peculiar powers of acting with which different kinds of remedies are endowed, it is not difficult to underſtand why theſe things ſo frequently defeat their own intention, and, inſtead of procuring health, bring on diſeaſes and untimely death. Theſe commonly denominated alteratives, unleſs they have been of a draſtic quality, are, for the moſt part, leſs pernicious, leſs in degree, and more ſlowly hurtful. But as the abuſe of evacuants is more frequent, ſo their effects are the worſt. They certainly hurt, for this reaſon, becauſe they either throw out more than is proper, or with an uſeleſs an uſeful part, which ought to have been retained, either too precipitately, at an unſeaſonable time, in an improper manner, or from unuſual places (401.). They likewiſe injure the emunctories by the ſtimulus, attrition, dilatation, anaſtomoſis, diapedeſis, diæreſis (203. I. II. III. IV.), infirmneſs, incontinency, infarction, and diſorder. They beſides diſturb the order of nature, fruſtrate her intentions, ſolicit her unprepared, accuſtom her to extraneous ſtimuli, render her inſenſible to her own, incite her to repair that which was unſeaſon-

ably ejected, for no other purpoſe than that it may be immediately excreted (291.): Whence, when there is not a ready excretion, ſhe is made uneaſy by redundance, and endeavours and ſtrives to expel the irritating matter. Thus, at length, wholly addicted to this work, ſhe conſumes the ſtrength and juices of the body and aliment, in preparing matter inſtantly to become a burden. If theſe muſt in time neceſſarily reduce the moſt robuſt bodies, how much ſooner, and more certainly, muſt they ruin the valetudinarians, who too frequently, from this abuſe, vainly promiſe themſelves ſtrength?

485. To theſe may be added, that remedies not unfrequently hurt, although applicable in the caſe, if they are imprudently uſed to remove affections, familiar to nature through cuſtom, which have in themſelves ſomething medicative; for, when cured, they are often ſucceeded by far greater evils.

Of the Powers which contain Poiſon.

486. If any thing of ſmall magnitude ingeſted into the human body, or applied externally, by a ſingular ſtrength, not anſwerable to the bulk, produces effects far greater than expectation, which tend to the deſtruction of life and health, that is called a poiſon.

487. So numerous are the things of this ſort, and ſo different their modes of acting, that the nature of our inſtitute does not permit us to treat each of them ſingly in this place. They deſerve, however, to be conſidered in general.

488. Some of the poiſons poſſeſs a mechanical acritude (292.), equal in its effects to that which occaſions wounds and fractures. Therefore they being

ſwallowed, irritate, prick, cut, and lacerate the internal parts endowed with an exquiſite ſenſe. Whence they create pains, ſpaſms, wounds, hæmorrhages, inflammations, and ulcers almoſt always fatal; ſeeing they ſcarcely can be ſubdued, deterged, or reduced to inertneſs in the viſcera, conſtantly agitated.

489. There is in others a chemical acrimony (293.), manifeſt or occult, of various ſorts, which affects the parts with the like injuries as the former (488.), and diſſolved in the humours, acted upon by the heat and motion of the body, may penetrate more deeply, and be applied in many ways (301.); conſequently the effects of theſe are underſtood from (306.).

490. Some invade the humours ſo ſtrongly with a ſeptic power, that, by the putreſcency widely diffuſed, the body from thence waſtes and falls away, the ſolids not leſs than the fluids being deſtitute of their coheſion. (Conf. 161. II. 288. 310. to 314.): Whence we can clearly perceive the evils which they induce.

491. The deleterious power of others conſtringes the veſſels, inſpiſſates the humours, obſtructs the paſſages, ſuppreſſes motion, retards and ſuffocates the vital circulation, ſecretions, and excretions; and thus ſooner or later induces death.

492. By far the greateſt number, and thoſe the moſt pernicious, invade the vital principle (169. *et ſeq.*), and, by either diſturbing its motions with violent irritation, or exciting it vehemently, or even ſuſpending it by the induced torpor (195. 199.), deſtroy the functions of life. It is likewiſe probable, that the other effects of poiſons upon the ſolids and fluids is, in a great meaſure, owing to the

ſame vitiated motions of the vital powers; at leaſt, that theſe follow as the conſequences, and are therefore more deadly. The degrees, therefore, of a virulent malignancy ſeem chiefly to be meaſured by this power.

493. From whence may it be underſtood, why the faculties of the ſenſes and motions, which obey the will, are, for the moſt part, thrown into the ſaddeſt diſorders; ſo that one would ſay, the very citadel of the mind was beſieged by this enemy (179. 209. III.)? And why the powers of nature here ſeldom avail (180.)? And how very many of the moſt efficacious remedies are ſo little different from poiſons, that they ſeem to be altogether doubtfully aſcribed to either genus, or to pertain to both? The medicinal and poiſonous qualities, where they approach one another in the neareſt degrees, are mutually changed by a ſmall difference of quantity.

494. But, although theſe evidently enough demonſtrate the efficacy of poiſons in general, by no means, however, are they ſufficient to explain the peculiar effects of every ſingle one; how it happens that they exert their malignancy upon particular parts and functions in very different ways, by a variety wholly inexplicable. The moſt acute underſtandings are here employed to little purpoſe.

495. Neither is it of leſs difficult inveſtigation, that every poiſon does not indiſcriminately hurt every perſon alike, nor even the ſame perſon, in whatever way applied. Some, in form of vapour, being mixed with the air, and admitted by the pores of the body, produce their effects; others, principally when they are ſwallowed; ſome, only by a wound, which the power of the ſtomach is capable

of rendering inert; others in different ways; ſome indeed operate in any of theſe forms. As we only learn theſe things from obſervation, ſo, by what manner they act is difficult to be explained.

496. The nature of noxious miaſmata, which infect the air (440.), is not diſſimilar: For, although theſe do not act with a force ſo deleterious, they act, however, in a ſmall quantity, the matter of them being often ſcarce manifeſt to the ſenſes, and of a ſingular kind, creating obſtinate, malignant diſeaſes, which the power of nature can with difficulty overcome (486.). Neither are they unfrequently effluvia of virulent bodies. Wherefore they wholly deſerve to be ranked with poiſons.

497. From how many various ſources theſe inquinations are conveyed into the atmoſphere, may, in ſome meaſure, be underſtood from 440. 444. Nor is it difficult to be conceived, on account of the extenſive communication which living animals have with the air, that there are many ways open, by which they may be admitted, and, by ſtimulating the ſolids, rendering them torpid, and diſordering the texture and motion of the juices, prove hurtful. But, when we attempt to trace the particular natures and ſingular powers of each, their manner of acting, and to render a reaſon for ſo many different effects, we are at as great a loſs here as in giving the hiſtory of poiſons (494. 495.); nor can any thing be determined for certain, beſides the general doctrines.

498. To this place belong contagions, by the genital power of which, as it were, diſeaſes propagate their own ſpecies, and the corruption being communicated in many ways, ſpread and rages univerſally. They certainly both act by their virulent

power (486. 496.), and every one in their own way, upon different parts of the body, and produce ſtated effects, but very different. Whence it is evident, that as in their origin, ſo in their natures, they greatly differ among themſelves, and that every one poſſeſſes its own peculiar powers, by which, when they have come into bodies favouring their action through their proper channel of communication, they every one procreate their own diſtinct form of diſeaſe by a conſtant law, no otherwiſe than the ſemina of plants and animals, received in fit places, evolve their determinate ſpecies. By which it happens, that a particular diſeaſe ariſes from every different contagion, and there are reckoned as many different genera of theſe, as there are of contagions, by no means to be confounded with each other.

499. Is every contagion therefore animated, and does every one contain its own particular ſpecies of animalcula, whence it ariſes and is multiplied? What is peculiar to ſome cannot with like certainty be aſcribed by analogy to the whole genus: Or, is the power of imagination, or fear, the mother of contagions? It is not to be doubted, that violent agitations of the mind can contribute in generating and heightening contagion; but even though they, affected with fear alone, are infected, it is manifeſt to the ſenſes themſelves, that a particular matter happens in true contagions, without which the reſt can ſcarce effect any thing. Whether or not is it immutable, and is the nature of contagions to be compared to the fixed principles of things by this property? And, if it is ſo, does it thence follow, that both they who ſeek a ſpecific antidote for a poiſonous contagion, and who labour to tranſmute the baſer metals into gold, equally blunder on the ſame

ſtring?

ſtring? A doubtful propoſition, and a falſe concluſion, do not affect the doctrine of Dr Boerhaave, although declared by an archiater *.

500. But what chiefly deſerves to be attended to, is that wonderful faculty, which contagions poſſeſs, of changing the ſound humours of the body into a ſimilitude of themſelves. Upon this depends the amazing multiplication of the ſame. It cannot, however, ingraft itſelf, unleſs excited by the power of life in a body fitted for its reception; ſo that we may doubt to which the greateſt part of the effect is owing.

It is certain that human nature poſſeſſes the power of aſſimilation, which is employed in increaſing and ſuſtaining the body by aliments. It is not eaſy to determine, however, that it is this by which contagion, ſo prejudicial to life, ſpreads itſelf; unleſs it is denied that corruption differs in any reſpect from coction, and what nature reluctantly ſuffers is to be accounted the ſame with that which, by a conſtant endeavour, ſhe performs for the conſervation of her own body.

Whoever aſſerts a generative power to be inherent in contagions, aſſumes a hypotheſis as yet incapable of demonſtration (499.).

Neither do they more convince, who derive the whole of this efficacy from the ſolids of the living body alone ſtimulated by the venom into ſingular and inordinate motions; as if it were not very evident, that effluvias, odours and ferments can likewiſe ſuddenly induce wonderful changes upon liquors, upon which there is no action of containing veſſels. Does any one believe the former mode of acting

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* Dr Mead precept. med. de variolis.

acting to be better underſtood than the latter? and in a body the ſympathy both of whoſe parts and powers is ſo great, that nothing is to be aſcribed to mixture, but that every thing is owing to the oſcillatory motions in changing the texture of the humours.

Ferments likewiſe, taken in the more general acceptation of chemiſts, although they poſſeſs a power of aſſimilating proper to themſelves, which may ſeem to differ leſs from the action of contagions, by no means however do they explain this matter, as the idea of theſe does not univerſally apply, nor is their manner of acting leſs inexplicable, than of ſtimuli.

Wherefore it is rather credible, that all and every one of them do not propagate themſelves in one and the ſame manner; and perhaps thoſe will come nearer the truth, who attached to neither of the different opinions ſeparately, conſider the two together.

Nevertheleſs, as no certain explanation of this matter can be given, it would have been to no purpoſe to have with much ratiocination advanced many vague and uncertain things, which only are able to comply with an opinion, and not ſcience.

Errors in Animal Motion.

501. MUSCULAR motion, which man exerciſes at diſcretion, is ſo connected with the other motions of the living body, that it cannot tranſgreſs by any material exceſs or defect, but ſooner or later the oeconomy is diſordered. From theſe changes, therefore, which are obſerved to attend and enſue upon the alternating action of muſcles in the

body, the morbid effects, which too much motion or reſt induces, ſpontaneouſly diſtinguiſh themſelves.

502. A muſcle, contracting itſelf by its own power, becomes ſhorter, thicker and harder, ſwells, and changes its figure and ſituation, according to the form of the neighbouring parts; it both moves itſelf in its whole extent, and every ſingle fibre, and likewiſe moves the parts to which it belongs, and to which it is attached; beſides, it alſo affects its antagoniſt muſcle, if it has any, and in like manner the parts to which it is contiguous: But when it relaxes itſelf, and returns to its priſtine ſtate, all the parts which were diſplaced are likewiſe reſtored to their former ſituation. So that, from the beginning of the contraction to the acme, and from thence to a full relaxation, all theſe parts are in a conſtant and much varying motion.

503. Nor is it evident, that the voluntary contraction of a muſcle ſo depends upon the vital motions, that the velocity which accreſſes to a muſcle takes away from the principal. Nay, there is really, as it were, a new motion here added to theſe. The whole quantity therefore of motion, and conſequently attrition, is increaſed in the body according to the number and force of the muſcles acting reciprocally.

504. Wherefore, during the exerciſe of the muſcular power, there is induced upon the neighbouring canals, reſervoirs, and receptacles, a manifold preſſure, remiſſion, diſtraction, coarctation and agitation, which, when communicated from thence to the contents, there is likewiſe given to theſe an extraordinary degree of motion, by which it happens, that the ſtagnating are moved, thoſe in motion accelerated, the mutual action of ſolids and

fluids betwixt each other, and what conſequences thence enſue, are augmented.

505. Thus, every muſcle whatever, alternately contracting and remitting itſelf, applies an additional force to its own tract of the vaſcular ſyſtem, which urges and propels the humours more briſkly, whither they are directed by the laws of circulation. The motion of the ſame muſt therefore be neceſſarily accelerated.

506. By the ſame cauſe the venal blood propelled in greater quantity, and with greater force, and poured into the heart, proves a ſtimulus, by which the number and force of the contractions are increaſed. Whence, by the ready conſent, both reſpiration is incited, and the motion of the arteries through the whole body quickened.

507. The vital powers therefore, by which the humours are circulated, by the continual action of the muſcles, are every-where animated, and conſtantly increaſed with new ones (503. 505.). So that the vigour of circulation, attrition, heat, and whatever depends upon theſe, increaſes, when the conditions of the body as well as the functions are improved.

508. There is eſpecially derived great aſſiſtance, not under one denomination, to the laboratories and inſtruments, by which coction, defecation, diſtribution and aſſimilation is effected; ſo that the buſineſs of nutrition proceeds proſperouſly. And theſe are the benefits in common of a moderate circulation.

509. Whence it is evident, what ſorts of miſchiefs it may induce upon the oeconomy when too intenſe: Becauſe it increaſes the velocity of the circulating humours in the ſame degree in which it

itſelf exceeds (409.): Wherefore the evils which thence ariſe can be generally reduced,

I. To an immoderate increaſe of the native heat, by which the humours agitated and attenuated, the more ſubtile part being diſſipated, are inſpiſſated, the ſerum and fibre of the blood aſſume the inflammatory diatheſis (367.), the ſalts and oleaginous parts, by the continual attrition, are exalted, reſolved, and rendered volatile, acrid, putrid, rancid, fœtid, and aduſt (424. VII.), very unfit for the vital circulation.

II. To very dangerous leſions of the containing parts. For the humours rarefied and propelled with a great force, immoderately dilate their veſſels, irritate, affect with detrition, rupture, and deſtroy them: Whence aberrations (397. to 406.), pain, inflammation, acute fever, ſuppuration, gangrene, hæmorrhagy, or even ſuffocation and ſudden death, from the vital viſcera being overwhelmed with the accumulated blood.

III. To a commotion of the juices, which under a moderate circulation are at reſt, ſo that being forced from their receptacles, they deviate from their courſe.

IV. To various diſorders, finally, of the ſecretions and excretions, by the power of which every ſort of vitiation of quantity, quality, motion and place, is introduced into the matters which ought to be ſecerned and excreted.

510. It therefore happens, from the more mobile and volatile nature of the fluids than of the ſolids, that an unequal loſs is ſuſtained under a more immoderate exercitation; hence the bulk of the former decreaſing, the ſolids prevail, the ſapleſs bodies grow dry and rigid: The water and ſpirit, the more te-

nuous part of the humours, being diſſipated, the craſſamentum remains (284.) inert and glutinous, immeable through the ſmaller veſſels: Whence exſiccation, contraction and concretion of their parenchymatous ſubſtance, ſo a greater rigidity (164. 166.) of the whole compages. The fat, where it ſtagnates in its repoſitories, being ſet in motion, liquified, and returned into the blood, by the heat and motion degenerating from bland, into acrid and rancid (375.), is expelled by the emunctories: hence ſudden emaciation (395.). The nutritious gluten (379.) every-where diffuſed through the fibres of the ſolids, is rubbed, expreſſed, becoming more acrid by motion is excreted, and being deprived of the more tenuous part it concretes: Hence defect of nutrition, increaſe of rigidity. The bile likewiſe too much agitated, and rendered aduſt, is exalted into the higheſt acrimony, by which it both infeſts the *primae viae*, and, paſſing out of its receptacles, it invades the reſt of the body with its malignity.

511. From what has been ſaid (509. 510.) it is evident, that the exceſs of animal motion alone can ſo vehemently alienate the ſolids and fluids of the body, as that it may ſeem to act even with venomous powers (486.); and when, in general, it almoſt always hurts any perſon, and is ſeldom of benefit, it however more eſpecially injures, among the ſound, thoſe of a tender age, the more delicate ſex, a bilious, dry, hot temperament, but chiefly the plethoric and exceſſively corpulent; thoſe prone to hæmorrhages or abortion, and in whom ſome viſcus or the whole body is in a conſumptive ſtate, both thoſe who labour under a difficulty of breathing, are affected with calculi, and thoſe whoſe circulation is im-

peded by obſtinate obſtructions of the ducts, tumours, congeſtions of humours, &c. and when inſuetude concurs with thoſe, or great heat of the air, or inanity from want of meat and drink, or a ſudden tranſition from a ſtate of reſt to vehement motion, the miſchiefs induced muſt neceſſarily be ſo much worſe.

512. The evils which happen to the muſcles themſelves too much exerciſed, are of leſs conſequence; ſuch as laſſitude, debility, tremour, pain, ſpaſm, and inability of motion. For theſe, however, reſt is almoſt the only remedy. But the dryneſs, rigidity, and increaſe of the tendinous ſubſtance, which exceſſive labour induces upon the fleſh of muſcles, is not equally eaſily removed.

513. Neither is the health of thoſe more fortunate, who are addicted to the oppoſite error. For too much reſt induces torpor both upon the motive powers themſelves, and upon the parts which muſt be moved. The muſcular power, through diſuetude of contraction, pinguid accumulations, and languor of the vital influx, is diminiſhed and ſuppreſſed; the joints loſe their aptitude for motion, by the ligaments turning rigid by eaſe, and the ſynovia coagulating (222.), the antagoniſts more ſtrongly counteract. So that the neglect of animal motion at laſt brings on impotency.

514. The circulation of the humours, however, ſuſtains more injury by this cauſe; as that being committed to the powers of life alone, when deprived of extraneous aſſiſtance, it firſt languiſhes in the ſmaller veſſels, afterwards through the whole circulatory ſyſtem: Whence ſtagnation, accumulation and inviſcation of the humours, diminution of the native heat, impediments of ſecretion and excretion,

tion, and very many evils which ariſe from theſe. From this ſource flow polyhymy (385.), plethora (387.), and obeſity (394.), which fill the body with congeſtions diſproportioned to the ſize and ſtrength of the firm parts. An inert, glutinous (283.), aqueous (287.) frigid cacochymy quickly ſucceeds the plenitude, deluging the whole body, by which the lax, ſoft, flexile ſtate (160. 162.) is induced upon the ſolids, the vital power becomes torpid (196. 198.), the nervous energy languiſhes, ſerous congeſtions, leucophlegmaſia, various kinds of dropſy, averſion to motion, hebetude of the ſenſes, ’αναισθησια, i. e. ſtupor, and at laſt ſuffocation of all the functions, are produced.

515. The organs of firſt digeſtion, which are contained in the abdomen, are, in compariſon of others, very badly affected; eſpecially if they are compreſſed by an inclined ſedentary poſture of the body, and the quantity and quality of the aliment is not accommodated to an inactive life. For when unaſſiſted in their work by a briſk reſpiration, external motion and ſucceſſion, it follows, that they imperfectly concoct the aliment, ſlowly propell, and ſuffer it to be corrupted by a longer delay; they do not enough extract and depurate the uſeful part, and accumulated fæces; whence are produced all ſorts of vitiations of the chyle (323. to 332.), ructation, flatulency, ſpaſm, anxiety, a coſtive tumified belly, anorexy, debility of the whole laboratory, inertneſs of the menſtrua, various degeracies of the ſame, obſtruction of the veſſels of the meſentery, and other innumerable evils. Beſides, the vaſt quantity of juices with which theſe viſcera are deluged, by their own powers alone, deprived of auxiliary aid, cannot be ſufficiently mo-

ved; the circulation therefore languiſhes; there takes place a congeſtion of humours; the blood ſlowly returning, too ſeldom refreſhed by the air of the lungs, nor incited by the vigour of the heart, becomes vapid, infarcts the ſyſtem of the *vena portarum*, ſpleen, liver and other parts; neither is it any wonder that the bile is vitiated (372.), that cacochymy, ſcurvy, cachexy, jaundice, dropſy, hypochondriaciſm, and other diſeaſes of that ſort, are thence produced.

Injuries from particular Motions and Poſtures.

516. THAT variation and moderation, which nature in moſt of her concerns aims at and deſires, likewiſe aſſiſts in the motion and poſture of the firm parts of the body. Whatever is in this reſpect immoderately violent, or too long continued without remiſſion, proves hurtful; nor ought it only to be avoided by the ſick, but even in the ſound may be a cauſe of diſeaſes.

517. An erect poſture, too long protracted, loads the inferior joints with humours ſlowly returning to the heart; whence infarction, oedema, varices, ulcers. Pains of the loins, kidneys and coxendix are likewiſe contracted by this poſture; as alſo diſeaſes of the genitals from a congeſtion of humours, and inguinal (233.) and crural hernia (234.); in women uterine fluxes, fluor albus, abortions, and prolapſes of the vagina and uterus (250. to 254.); eſpecially if any concurrent ſtraining has increaſed the preſſure and protruded the parts tending downwards by their gravity: But the blood both returning with more difficulty towards the heart, and thence aſcending to the head, when a perſon ſtands long

without motion, it is no wonder that he is affected with laſſitude and fainting, more than by other exerciſes.

518. Sitting at reſt, when immoderate, although leſs fatiguing, is, however, not more ſalutary, eſpecially with an inclination of the body and much flexure of the joints. Hence ſimilar diſtempers happen to the loins, kidneys, and hip joints (517.): as alſo curvature of the back, obliquity of the ſpine, ſtupor of the legs, iſchias, lameneſs; finally, from the impediments, the vitiations of the abdominal viſcera juſt now enumerated (515.)

519. Too much decumbency, prejudical to the uriniferous ſyſtem, compreſſes the kidneys, obſtructs, affects them with inflammation, and impedes the ſecretion, propulſion, and excretion of the urine; whence mucus, ſabuloſity, calculus, and the conſequences of theſe. The horizontal poſture likewiſe hurts by loading the head with humours: whence cephalalgia, opthalmia, hæmorrhagy, hebetude of the ſenſes, vertigo, ſopor, &c.

520. The greateſt number and moſt important affections are chiefly produced from ſudden, violent contraction of the muſcles, long continued without remiſſion; there likewiſe concurring an inhibition of the breath, when an effort is intended. For the vehement traction, preſſure, diſtenſion, arctation and propulſion, infer violence upon the parts, vary in every way the mutual relation between the containing parts and contents, and greatly alter the motion and direction of the humours, eſpecially when the breath being reſtrained, the paſſage of the blood through the lungs is ſuſpended. Whence deceſſion of the muſcles and tendons from their ſeats (243.), relaxation of the

ligaments, and of the tendons themſelves, rupture of the joints, ſubluxation, luxation (226. 227.), fracture of the bones (217.), and other vitiations of ſituation and connexion (224. 229.), herniæ (230.), prolapſes (248. *et ſeq.*), dilatation of the paſſages and receptacles, anaſtomoſis, diapedeſis, diæreſis (203.), aneuriſm, varix, every kind of aberration of the fluids (397. to 405.), hæmorrhagy, hæmoptœ, bloody urine, ſugillation, emphyſema, various tumours and innumerable evils which ariſe from theſe.

521. If any one applies theſe to various parts of the body, as ſingle ones are moveable by their own muſcles; or, on account of vicinity or ſome certain conſent, ought to be differently affected by theſe acting, he eaſily underſtands, how many and what ſort of miſchiefs can be induced by cough, laughter, ſneezing, oſcitation, ſtretching, declamation, vociferation, ſinging, blowing of trumpets, dancing, ſtruggling, wreſtling, carrying and lifting of great weights, and other motions of this ſort, if they have been enormous.

Immoderate Exerciſes of the rational Faculty.

522. A too intenſe contemplation of thoſe things, which every one eaſily experiences in himſelf, plainly diſcovers to us, that the ſtrength is not leſs exhauſted by the operations of the mind than by the exerciſes of the body, and that alternate reſt is neceſſary to be interpoſed to the former, as well as the latter, that health may continue.

523. The mind is ſo intimately connected with the body, while life remains, that it may be difficult to conceive any operation of it ſo diſtinct, as not to have joined with it ſomething of bodily change,

in ſome way or other. For, beſides that determinate motions of the body ſucceed many cogitations, the ſenſories likewiſe, as well internal as external, ſeem to be capable of adminiſtering matter and occaſions of cogitation, ſcarce without ſome ſpecies of motion of their own ſtamina. It therefore behoves, when the mind is exerciſed in her laboratory, the organs of this to be more or leſs incited, ſtretched, relaxed, vibrated, and reciprocally moved, or, at leaſt, to be in ſome other ſtate than when ſhe is at reſt.

524. It is, beſides, very probable, that the nervous ſyſtem, where it governs ſenſe, is animated with a certain motive power, perhaps to be compared to the vital or muſcular virtue (170. 502.), which, while acting, its ſtamina can be ſtretched, become rigid, ſwell, and be fitted for conceiving vibrations on the application of ſtimuli, and in its turn remit and grow lax, when at eaſe: Nor is it of any conſequence whether we derive this from that ſame ſpirit which they call animal, and diffuſed through the nerves, or ſuppoſe it communicated in ſome other way from the organ, or join with me in concluding nothing concerning ſo doubtful an affair. It ſeems proper, however, to acknowledge, that a certain command is allowed to the mind over it, by which it can excite it, when ſilent, to action at diſcretion, as well in the whole body, as in a particular part, in like manner as the muſcles obey its determinations.

525. But it is evident, that this power of perception (524.) communicates with the vital power, ſo as the one can prove a ſtimulus to the other (179.). But there even, perhaps, obtains a mutual intercourſe between the ſame and the muſcular

power, by which it happens, that, by the intervention of the nerves, the intentions of the mind are communicated to the muſcles: unleſs you more willingly ſuppoſe that the ſame principle of motion is given to both, but that, according to the different conformation of the parts which it animates, it acts differently. It is certain that neither the nervous nor muſcular energy is inexhauſtible; nor does it bear conſtant labour; nor can the one be affected with laſſitude without detriment to the other.

526. Although, therefore, the agitations, which are excited in the ſenſories, are far leſs manifeſt than the motions of the muſcles, the very great tenderneſs of the nervous ſubſtance cauſes, however, that this muſt be, if not more, at leaſt nothing leſs, affected and changed by immoderate exercitation, than the muſcles by the exceſs of animal motion (512.), nor thence contract diſſimilar leſions. The very tender ſtamina in whatever way (523.) too frequently, longer, or more vehemently agitated, rubbed upon one another, are fatigued, loſe their tone, conceive and excite irregular involuntary tremours unnaturally in the neighbouring parts, grow rigid, as it were, with ſpaſm, or become flaccid; the nervous power itſelf begins to languiſh (524. 525.), and is diſſipated. From which, unleſs relieved by ſeaſonable reſt, there are produced hebetude of the internal and external ſenſes, impotency, confuſion of ideas, diſturbed dreams, watchfulneſs, a depraved imagination, delirium, fatuity. Can ſiccity and rigidity, which happen to the muſcles by conſtant labour (512.), in theſe organs likewiſe be produced, by which a ſenile vitiation is prematurely brought upon the faculties of the mind?

527. Theſe evils become more heavy, and are augmented by new ones, when the agitation of the *ſenſorium commune* excites the vaſcular apparatus of the encephalos into enormous motions, and fills the head with a redundance of blood. Whence diſtenſion, pain, heat and inflammation of the parts, and various perturbations of the functions of the mind ariſing from theſe. But it likewiſe happens, from the mutual conſent of the principles of motion (525.), that, by the nervous power (524.) being too much ſtretched, fatigued and diſſipated, the powers of the other ſyſtems ſuffer the like things; hence the body is wearied without its proper labour, and there enſues a leſion of all its functions.

528. The vitiations from neglect of animal motion (513. to 515.) concur, and a ſedentary life, or ſtanding poſture, common to theſe engaged in literary ſtudies, which, as they are prejudical enough of themſelves, conſequently accelerate and advance their progreſs, when the ſtrength of the body is impaired by reſtleſs cogitation.

529. The exceſs of ſtudy, however, is rendered more ſupportable by the variety of ſubjects: But there are few, whom an intenſe and uninterrupted contemplation of the ſame thing does not greatly hurt. For that part of the *ſenſorium commune*, which is then alone in action, and upon which the mind, as it were, leans with her whole weight, ſuffers no leſs violence than ſingle muſcles long and forcibly contracted (520. 526.). Either its ſtamina, therefore, become ſo obſtinately ſtiff as not to be able to relax, or, when too briſkly agitated, do not terminate their vibrations, or finally, too much diſtracted, loſe their tenor. Whence all ſorts of perturbations of the mind, melancholy, ἔκϛασις, or

emotion, mania, catalepſy, fatuity, impotency of the ſenſes, reſolution of the nervous virtue, and the like, are produced.

530. Neglected culture of the mind indeed induces torpor upon the ſenſory organs, hebetates and extinguiſhes the nervous power; either impairs the whole faculties of the mind, or ſome one in particular, as either the whole or ſome of them are inert and at reſt. Unleſs, however, there concurs a ceſſation from animal motion, it does not ſo impede the other functions, but that we may ſee the ſtupid and doltiſh more frequently enjoy a perfect ſtate of bodily health to extreme old age, than the ingenious.

531. From theſe things collated with each other (508. to 530.) it is manifeſt, that the exerciſes of the mind far more impair health than thoſe of the body. Is it not likewiſe evident, that more intenſe ſtudies and lucubrations by no means ſuit every age, ſex and temperament? Why deep meditation fatigues more than muſcular motion? Wherefore mental application is, for the moſt part, ſo pernicious, but moderate exerciſe of the body very ſalutary to thoſe who are convaleſcent from a ſevere diſeaſe?

The noxious Power of Perturbations of the Mind.

532. There is in the mind an impetus, by which it is carried to thoſe things which, becauſe they are either good, or bad, or unuſual, at leaſt they appear ſuch, pleaſe, diſpleaſe, or aſtoniſh. If this at any time excites greater commotion in a perſon than is agreeable to the rules of right reaſon, it is called a perturbation of mind.

533. A greater or leſs deviation therefore of thoſe actions, which proceed from the mutual conjunction of mind and body, from their due tenor, accompanies

and diſcovers this (532.). Whence it follows, that, in that ſtate, the organs likewiſe, appointed for the ſenſes and involuntary motions, are agitated with diſturbances, and the powers, by which they are animated (502. 524.), deviate into depraved motions.

534. We alſo learn from obſervation, that the motion of the heart, and arteries, heat, colour, and habitude of body, are at the ſame time altered; ſo that the whole ambit of circulation, and the vital powers (170.), upon which this depends, and whatever functions of certain parts it directs, are inordinately affected.

535. Which circumſtances, if any one rightly conſiders, as they moſt evidently appear, it will ſeem doubtful to him, whether it may be more properly called a perturbation of the mind or of the body; when there is none of the functions of the whole human œconomy, which, free from this impetus, cannot be perverted.

536. But in whatſoever way you conceive theſe (532. to 535.) to happen in man, whether by the mind commanding, or a ſecret inſtinct, or a certain power inciting, inherent in the mind, diſtinct from its other faculties,—this is certain, that they are owing to that truly ſurpriſing intercourſe which ſubſiſts between the two principles of man: But this itſelf, however, at that time, ſo exceeds the laws and limitations, by which it is ſubjected to a tranquil ſtate, that the effects which are exhibited ſeem altogether uncommon, and far ſuperior to its powers; at leaſt, when they occaſionally ariſe, they can ſcarcely be impeded, or, when ariſen, ſuppreſſed at diſcretion.

537. Moreover, the two ſyſtems of action, which are given to man, the one common to the mind with the body, the other, if not merely corporeal, at leaſt remote from conſciouſneſs; although they are governed by different laws, they have, however, their abodes in the ſame body, and, by a wonderful commixture diffuſed through individual parts, delight in inſtruments contiguous to one another, connected, or even common, and are animated either by the ſame powers, or thoſe ſympathizing with one another (525.). Wherefore, whatever commotions are excited in either, it cannot be, but that they are as remarkably communicated to the other.

538. Theſe things medically conſidered, teach us, that impetuous agitations are given in motions of the mind, which, firſt produced in the thinking principle, and conſequently in its laboratory, thence extended over the reſt of the body, and from this revolved back from whence they came, by their very rapid egreſs and return, ſo vehemently increaſe, that they can diſturb whatever powers and faculties are in the whole body, and hence ſhake the foundations of the whole human œconomy.

539. Although therefore to the moderate, who are guided by reaſon, there accrue ſingular advantages, not leſs phyſical than moral; yet, when violent, they mightily injure both life and health; eſpecially, if at any time they break forth into ſudden ſallies of rage, or go on in ſtubborn duration, or paſſions warring within are in vain ſuppreſſed, or one either allied, or of an oppoſite nature, ſpeedily ſupervene upon another.

540. Thence it daily happens, that innumerable vitiations of the ſenſes, motions, circulation, reſpiration, ſecretion, excretion, coction, generation, &c. flow from this ſource, which ſometimes indeed are again ſubdued by the powers of nature: it is not ſeldom, however, that they likewiſe paſs into diſeaſes of every kind, and into ſudden or protracted deaths.

541. But as every one of the affections of the mind, according to its diverſity, induces different changes upon the external parts and actions of the body, by which, as if by their characteriſtic marks, depicted outwardly, they exhibit themſelves to be diſtinguiſhed, ſo each, in their own peculiar way, weaken the internal conditions of life and health, by oppreſſing, agitating, and diſturbing the motive powers of the body. And thence chiefly ſeem to be produced multifarious vitiations of the humours (406. to 413.), which, in affections of the mind, as they have been joyful or ſad, differently manifeſt themſelves in the pulſe.

542. And even the principal inſtruments of motion accommodate themſelves by an accurate conſent to the deſires and antipathies of the mind affected, and conſequently changes correſponding to the different ſtates of this are likewiſe excited in the body. Whence the attendants of joy are a briſker and more expedite circulation, ſecretion, and excretion: But, when it is too great and ſudden, they are watchfulneſs, inſanity, reſolution of the ſtrength, and even death by apoplexy. In love are not unlike things: But a protracted deſire of a thing beloved, and grief for what muſt be loſt, or cannot be obtained, induces inquietude, languor, anorexy, chloroſis, conſumption, noſtalgia, melancholia, erotomania,

rotomania, &c. Anger agitates the nerves, muſcles, blood, and bile; whence it creates fury, inflammations, ardent fevers, enormous diſturbances of the viſcera of firſt digeſtion, various aberrations of the fluids (397. *et ſeq.*), and even a poiſonable quality. Hatred and reſentment, accompanied with watchfulneſs, ſlow fever, a proſtrated appetite, and hunger, induce paleneſs, torpor, emaciation, and cachexy. The nervous energy, by grief, becomes languid, the parts loſe their tone, the vital motions are diminiſhed: Whence a ſlow, contracted pulſe, a faint circulation, inviſcation of the humours, coagulation of the blood, defect of coction and nutrition, diarrhœas, obſtructions, ſcirrhus, melancholy, jaundice, dropſy, diurnal ſleeps, lethargy, catalepſy, &c. The muſcular power is weakened by fear, the limbs are affected with tremor, and the ſphincters are reſolved; by the diminiſhed vigour of the heart, the ambit of circulation is contracted; by the blood being repreſſed inwardly, there happens paleneſs, ſiccity, a ſuppreſſion of perſpiration, a greater attraction, anxiety, oppilation of the vital viſcera, and impotency of nature to perform her functions. Terror, in compariſon of others, moſt pernicious, by very violently concutiating the nervous ſyſtem, induces ſpaſms, convulſions, epilepſy, ſtupor, and a depraved imagination; the ſmaller veſſels being ſuddenly conſtricted, it forces the humours upon the greater ones; it throws the heart into palpitation, and the lungs into ſuffocation, brings on paleneſs, cold, congeſtions, abortion, ſuppreſſes the evacuations, and ſuddenly kills.

543. Wherefore it is manifeſt, that great emotions of the mind, by their violence, frequency and

duration, can much more heavily afflict the human œconomy than thoſe of the body; but that they more eſpecially hurt, if they accompany immoderate exerciſes of the rational faculty (522.). That they can, however, be of ſpecial uſe, when they happen to the ſick; hence are capable of communicating as well a medicative as a deleterious power: That it is very difficult to cure the diſeaſes, which they foment and nouriſh, unleſs by the mind being reſtored to tranquillity, and that theſe beſides ſeem heteroclite or malignant ſometimes, when the diſorder of the reaſon, which kept them up, compoſed lies at reſt; that the phyſiognomy, therefore, greatly aſſiſts the phyſician, that he may not labour in vain.

Exceſſes of Sleep and Watchfulneſs.

544. CONCERNING the matter, as well as ſtrength of the body, which, by the exerciſe of the functions, departs from a perſon vigilant, they cannot be repaired by meat and drink, in ſuch a manner as to ſuperſede the interpoſition of reſt. Hence the neceſſity of natural ſleep, and a degree of that conſonant to health.

545. Although, therefore, examples exiſt of ſleep and watchfulneſs, protracted without interruption for a very long time, the exceſs of either, however, is preternatural, and not to be endured with impunity. Life is not durable, where it does not require reſt in alternation; neither is there perpetual ſleep, but in the dawn of life.

546. Nevertheleſs, age, ſex, temperament, manner of life, climate, ſeaſon, cuſtom, &c. make

ſuch a manifold difference in theſe things among mankind, that it is difficult to determine the quantity due to every one by ſtated times. What things I have advanced therefore, concerning the miſchiefs of exceſſes, muſt not be underſtood, unleſs as applied by a congruous limitation to individuals.

547. During the time of watching, there always takes place a greater or leſſer exercitation of the external and internal ſenſes, and of the voluntary motions. There is, at leaſt, a great readineſs for action of the powers and organs, which are appropriated to thoſe functions. The whole laboratory of the mind is therefore either at work, or at leaſt ready prepared. On the contrary, in the time of ſleep, there is reſt of all theſe, relaxation of the inſtruments, and torpor of the faculties.

548. But ſeeing, after vigilancy, for ſome time, the ſenſes grow dull, the limbs oppreſſed, the muſcular power feeble, the mind herſelf languiſhes; and as, if weary of the mutual intercourſe with the body, longs for ſleep. It is evident, that that ſyſtem of the body is not ſo conſtituted as to be perpetually in vigour.

549. Beſides, on account of the continual agitation of the animal emporium, the other parts of the body of a vigilant perſon are likewiſe ſtimulated (179.), and all the motive powers whatſoever excited (507. 508. 525. 527. 537.). Whence the circulation of the blood, attrition, heat, attenuation of the humours, their change, ſecretion and excretion, are augmented, which, without this excitement in a ſleeping perſon, are diminiſhed.

550. Thence it is underſtood, that injuries are induced upon the ſenſory and motory organs by watchfulneſs; that the ſtrength of theſe are exhauſted,

ed, their ſtamina ſuffer detrition, inordinate vibrations are excited among them, not to be governed by the mind: When an incoherent ſeries of cogitations, a luxuriant fancy, a fixed impreſſion of ideas, delirium, vertigo, cephalalgia, agrypnia.

551. Beſides, by the augmented motion (549.) of the humours, the ſubtile parts are diſſipated, the groſs coagulated, the ſalts and oleaginous parts exaſperated, the bile exalted, the ſolids affected with detrition, the fat conſumed, and conſequently the body dried and emaciated, black bile is generated, there is induced hæmorrhoides, fevers, delirium, a melancholic ſtate, perpetual inquietude, and want of ſleep. How vehemently theſe joined to the former (550.) can diſturb the whole œconomy, is evident to every one.

552. All theſe indeed (550. 551.) are more facilitated and augmented, if an uninterrupted exerciſe of the rational faculty, ſtudies that are not varied, or any violent emotions of mind have acceded to vigilancy; ſomnolency proceeding from laſſitude, for the moſt part, very ſoon relieves the labour of the body.

553. The oppoſite evils ought, therefore, neceſſarily to happen to thoſe indulging in too much ſleep. Torpor of the whole laboratory of the animal functions, in its organs and powers, and even in the mind itſelf, deſuetude of acting, ineptitude; whence hebetude of all the ſenſes, inertneſs of the motions, ἀναισθησία, *i. e.* want of perception. From the increaſing lentor of circulation, obeſity, polyhymia, a cold ſpiſſitude of the humours, leucophlegmaſia, congeſtions of the head, an effeminate tenerity of the fleſh, ſuſpenſion of the ſecretions and excretions, accumulation of the excrement, de-

fect of coction, depuration, nutrition, and an extinction, and deadly ſopor of the vital energy over the whole body.

554. From which things (550. to 253.) compared, one with another, it appears, that the principal evils, which flow from this ſource, pertain to the too great or intermitted (501. to 530.) exercitations of the body and mind; hence, according to the various combination of ſimilar or diſſimilar powers, that they can be very much increaſed or diminiſhed. Cannot, therefore, either exceſs prove more or leſs prejudicial to any age, ſex, or temperament, or manner of life? But, if the power of making a choice of any of the two extremes was granted, which ſhould be preferred?

Inordinate Excretion and Retention.

555. THAT the body may continue in vigour, it is neceſſary that the quantity of the things excreted, as well as the ingeſta, ſhould be limited, and in due degree; nor ought things to be retained which ſhould be excreted, nor excreted which ought to be retained: For, when either circumſtance happens, it is to be reckoned prejudicial.

556. A great part of thoſe things, however, which are comprehended under this title, are more properly referred to the nature of a diſeaſe or the ſymptom (34. 41. 86.): Wherefore we ſhall only ſpeak in this place concerning thoſe things which can be comprehended under the name of cauſes.

557. The ſpitting the ſaliva, as it conſtantly flows into the mouth according to nature, weakens the coction of the aliment in a ſound perſon, by draining

ing away, at the ſame time, all the liquors like ſaliva, which nature conveys into the *primae viae*, that it may moiſten theſe, and aſſiſt in the digeſtion of the food. Whence thirſt, ſiccity, ſpiſſitude of the chyle, a more difficult ſeparation from the fæces, and a leſs ready abſorption. A defect of nutrition, emaciation and debility ſucceed theſe. But the blood deprived of its lymph, concreted, and atrabilarious, produces obſtructions, melancholy, and its conſequences.

558. The excrements accumulated and moiſtureleſs by a long ſuppreſſion of the belly, harden, and are with difficulty expelled afterwards; hence, the inteſtines being diſtended, impervious by ’εμφϱαξις, i. e. infarction, their fibres weakened, and the veſſels compreſſed, the abdomen ſwells; there are produced a hypochondriacal uneaſineſs, an obſtinate conſtipation, hæmorrhoides, heavineſs of the head, pain, vertigo, angina, opthalmia, vomiting, ilius, putredity of the fæces, heat, fever, ſpaſm, inflammation of the inteſtines, &c. Theſe things occur indeed in more delicate habits, which generate much of excrement. A ſmall quantity of fæces, even though retained for many days, which accumulate from the daily ſupply of aliment, does not hurt the robuſt.

559. They who reſiſt the ſtimulus of the urine, until at laſt it flows involuntarily, their bladder, diſtended beyond the natural ſize, afflicts the loins and hypogaſtrium with ſwelling and pain; the cavity of the bladder becomes immenſe; there is atony of its fibres, an invincible ſpaſm of the ſphincter, iſchuria ſlowly or never to be cured, ſometimes rupture (203. IV.), or κυστοκηλη, i. e. hernia (238.) or from the acrimony of the ſtagnating urine, inflammation

of the bladder and gangrene. From theſe proceed topical affections. There likewiſe accede, from an impeded ſecretion of the urine, a retention of urinous ſerum in the blood, putrefaction, a ſimilar corruption (313.) of the lymph, and of the liquors which are ſecerned from it: Whence anxiety, thirſt, nauſea, an urinous vomiting, ptyaliſm, perſpirable matter and ſweat, tremor, vertigo, delirium, convulſions, lethargy and death.

560. Perſpiration immoderately increaſed proſtrates the ſtrength, brings on *deliquium animi*, and ſudden death (427. IV.). The ſame ſuppreſſed dries and renders rigid the integuments, obſtructs the ſmaller veſſels, increaſes the quantity of the humours, and creates gravity, as is found from weighing them, and from the feeling, laſſitude, anxiety, torpor of mind, congeſtions in the parts, tumours, pains and inflammations; unleſs it is relieved by a proportionable increaſe of the other excretions. The acrimony of the retained excrement acceding, likewiſe induces fevers, eryſipelas, rheumatiſm and gout.

561. Exceſſive ſweating dries and debilitates the body, coagulates the humours by withdrawing the water (282.), diſpoſes the blood to the inflammatory (367.) and atrabilarian diatheſis (284. 365.), weakens the coherence between the lymph and craſſamentum (319.), inſpiſſates and diminiſhes other excrements, renders them immeable, and the dilated pores dangerouſly ſuſceptible of cold. How much theſe miſchiefs can effect, is underſtood from the places cited. Sweat, in like manner, checked by the application of cold, as a ſuppreſſed perſpiration (569.), proves hurtful. A habit of ſweating, either when it flows ſpontaneouſly, or is forced by

art, at laſt becomes natural, and often produces the moſt troubleſome diſtempers.

562. An immoderate effuſion of the ſemen not only by the expence of a very uſeful humour, but by the convulſive motion likewiſe with which it is emitted, too frequently repeated, proves chiefly hurtful. For the univerſal reſolution of the ſtrength, which ſucceeds exquiſite pleaſure, cannot be borne frequently, but it enervates. But the more the ſtrainers of the body are emulged, the more do they draw the humours from the other places; and by the juices being thus derived to the genitals, other parts are impoveriſhed. Hence, from too much venery, laſſitude, debility, immobility, feebleneſs of the loins, pains of the encephalos, heats, convulſions, hebetude of all the ſenſes, eſpecially the ſight, blindneſs, fatuity, a febrile circulation, exſiccation, leanneſs, pulmonic and dorſal tabefaction, effemination. Theſe evils augmented become incurable on account of the conſtant propenſity to venery, which is induced upon the mind no leſs than upon the body; it likewiſe happens, that obſcene repreſentations are made during ſleep, and the parts that are continually diſpoſed to erection, upon every the ſlighteſt occaſional cauſe, conceive an impetus, ſo that the ſmalleſt quantity of the ſemen repaired becomes a burden and a ſtimulus, and upon the ſlighteſt effort, or without this, is ready to iſſue out from the relaxed receptacles. Is it therefore evident, wherefore that exceſs deſtroys the flower of youth? Why ſo pernicious to the aged? Men however, even of the ſame age, greatly differ in theſe powers, ſome growing languid even with moderate venery, others ſcarce to be exhauſted by the greateſt exceſs.

563. Too much abſtinence is indeed rarely hurtful; nature ſeems however to injure the ſalacious, πολυσπέρμοι, or abounding with ſeed, by a debilitating pollution and gonorrhæa; oppletion, tumour, pain, and inflammation of the ſemeniferous parts; inſpiſſation and corruption of the ſtagnating ſemen, ſatyriaſis, ſpaſms, melancholia and venereal mania: ſometimes languor of the ſtrength, fluor albus, chloroſis, hyſteria and furor uterinus, is derived from this ſource to the more delicate ſex. A reſtrained ejection of the ſeminal liquor at the termination of excitement, induces ſpermatocele, cirſocele, ſcirrhoſity and cancer of the teſticles.

564. The lacteal excretion, when greater than the ſtrength of the nurſe, by withdrawing the nutriment of the body, creates debility, wanneſs, emaciation, a fluctuating circulation, hectic fever, conſumption, profuſe ſweats, abortion; beſides, by the frequent ſuction of the mammæ, the nervous power likewiſe becomes feeble, there is produced irritability (190.), dejection of mind, deliquium, palpitation of the heart, vertigo, hebetude of the ſenſes, eſpecially of the ſight, tenerity of the ſame, and hyſteric ſpaſms. There enſue upon a retention of the milk prepared, diſtention of the mammae, tumour, pain, fever, inflammation, ſuppuration, ſcirrhus, or rheumatic pains, upon its impetus being directed elſewhere, congeſtions of the humours in other parts, and the conſequences of theſe; unleſs ſome ſalutary evacuation by tranſpiration, ſweat, urine, ſtool, lochia or menſtruation, maturely ſupervenes.

565. The conſequences of a great loſs of blood, by what paſſages ſoever, are by the deficiency of the vital liquid (393.), decay of ſtrength, languor

of circulation, extinction of the native heat, paleneſs, feebleneſs of all the actions, accumulation of the crude, aqueous, lympid, mucous part in the humours (283. 287. 354. 360. 363. 366.), debility of the ſolids (157.), cachexy, leucophlegmaſia, dropſy. On the other hand, it is not leſs hazardous to reſtrain any natural efflux of blood, or to which nature has been for ſome time accuſtomed. For in moſt ſtates of health there is a tendency to collect ſome redundance of humours, by which the evacuations are rendered as well neceſſary as ſupportable; and what is loſt by theſe is conſtantly repaired. Thus an eſtabliſhed practice of blood-letting, even without neceſſity, grows into a habit, nor can it be diſcontinued with impunity (484.). Whence various plethoras (388 to 392.) univerſal and particular, diſtention of the veſſels, a choaked circulation, various efforts of nature to make an excretion, irregular motions, ſpaſms, vaſt congeſtions of the humours in particular parts (411.), inflammation, aberration of the fluids circulating (399.), impacted (400.), excreted (401.), effuſed (402. 403.), ſecreted (405.); but eſpecially remarkable hæmorrhages from unuſual places.

Of the Origin and Injuries of Calculi.

566. UNDER the head of retentions it may not be improper to comprehend calculi, although they might be very fitly conſidered in another place: For they have earth for their baſis, of which, as there is a great portion in the fluids and firm parts of the human body (137.), and in the aliments (148.) upon which we feed; ſo, what is ſuperfluous ought by the law of health to be maturely thrown out of

the body with the other excrements. The earth, therefore, retained and ſtagnating, if by a ſeparation made from other principles (320.), it has united its own particles, can form a calculus.

567. We learn from medical hiſtory, that there is ſcarce any part of the body, which may not be ſometimes liable to this concretion; but eſpecially the *primæ viæ*, and the urinary and biliary ſyſtems next in communication with the *primæ viæ*. Whence we would conclude, that thoſe humours which more than others are expoſed to the admixture of the crude, principally contract the calculous diatheſis.

568. The terrene particles of things ingeſted, ſtyptic by an acid chiefly inherent, retained in the ſtomach or inteſtines, having got ſome ſolid corpuſcle for a baſis there, to which they can adhere, and being agglutinated by the juices flowing thither, and condenſed by the conſtant rotation, may form a calculus in theſe parts, and increaſe it to ſuch a ſize as to be hardly expelled; a thing indeed leſs common to men than brutes. Witneſs the ægagropilæ and Bezoar ſtones.

569. Urine ſecerned in the moſt pure ſtate, lympid, even ſtrained through bibulous paper, ſtanding for ſome time in a veſſel, affixes very ſmall particles to its ſurface, upon which, if recent urine is repeatedly poured, there is at laſt produced a cruſt conſiſting of the elements of true calculi.

570. Any ſolid body which is inſoluble, when detained in the cavity of the *veſica urinaria* of a living perſon, or any animal, is quickly covered with a ſimilar cruſt, although the urine be free from vitiation. A calculus generated in the urinary paſ-

ſages likewiſe increaſes in the ſame manner, and, ſticking there, is rendered immeable.

571. Hence almoſt every calculus diſcovers in the center a nucleus, the baſis of the firſt cruſt, which one circle above another incloſes, pointing out the gradual increaſe.

572. From chemical analyſis, however, it appears, that it is not mere earth which thus ſurrounds it; but that there likewiſe accedes ſome portion of water, ſalt and phlogiſton, and very much of an elaſtic matter, of a ſimilar compoſition to that which obtains in the ſolid compages of the body (132. 133. 146.). But a more accurate examination of a recent calculus diſcovers likewiſe, that cruſts are compoſed of the pellicles, which form the chryſtals of ſalts; ſometimes, at leaſt, diſtinct and pretty large films of that ſort float upon the upper ſurface.

573. From which (569. to 573.) it is inferred, that the elements of calculi, only diſſolved as ſalts in water, ſwim in the urine in its natural ſtate, thence ſeparated in the manner of chemical chryſtalization, by a mutual attraction concrete into larger granules, theſe again into one another, and affix themſelves to whatever bodies come in contact; thus, by the ſame work pretty frequently repeated, urinary concretions and calculi are formed, as well in as out of the body. The formation of tartar from urine, ſtalactitae and tophi from water, illuſtrate and confirm this theory of lapidification.

574. Nor is it a proof of the contrary, that the matter, firſt diſſolved in water, after ſeparation is inſoluble therein, nor ſapid, according to the nature of ſalts. Natural hiſtory and chemiſtry furniſh abundant examples of this ſort.

575. Can a reaſon, therefore, be aſſigned, why a ſedentary life, lying long upon the back, a more frigid temperament, exceſſive fatneſs of the urinary organs, various vitiations of the uriniferous ſyſtem, obſtruction, inflammation, ulcer, ſcirrhus, callus, and the admiſſion of heterogeneous bodies into the urinary paſſages, ſo much favour the generation of calculi? All theſe form the conditions, by which the ſeparation of ſalts of whatever kind from their ſolvents is promoted.

576. There is, therefore, here no need of fermentation, putrefaction, gorgoneous ſpirit, irony particles, an agglutinating mucus, or alcaline ſpiculæ, volatile, which may combine the earth. Theſe can be eaſier feigned than demonſtrated.

577. It muſt be acknowledged, however, that there is beſides a certain hereditary particular diſpoſition, internal, congenite, or acquired after birth, by which, *ceteris paribus*, one perſon more than another, has a tendency to the calculous diatheſis. The folds of the uriniferous ſyſtem ſo formed as to detain the urine too long, or to admit an adheſion more readily than is proper, can contribute to this. That vitiation of the urine would ſeem to be principally in fault, in which its terrene particles immoderately abound, or ſooner than they ought make a ſeparation even while in the body (371.). Whence the paſſing of ſandy particles with the water, or in greater number thrown out before the urine, unleſs, having got an opportunity of cohering, they concrete into a calculus.

578. Seeing, therefore, we learn from obſervation, that boys, old people, the inactive, frigid, thoſe uſing acids or aceſcent meats, auſtere wines loaded with acid, the hypochondriac, hyſteric, and

ſteric, and arthritic, are more frequently infeſted with calculi than others; it is probable that a redundance of acido-terrene matter in the urine may conſtitute this diſpoſition. Nor is the nature of lithontriptics repugnant to this opinion, nor what is demonſtrated in chemiſtry relating to acids abſorbed in earth.

579. Although the nature of the calculus of the gall bladder is ſomewhat different, it is not, however, reckoned of a diſſimilar origin. It always ſuppoſes a degeneracy of the bile from its natural ſtate; as that which is found never depoſits any earth like the urine (569.). Whence the great differences of colour, yellow, green, livid, black, cineritious (372.), and the property of being inflammable not being the ſame in all, and different in gravity. Some, for the moſt part, are ſoluble in water, others not: Nor is it enough evident, that they have their matter always from the bile itſelf alone, although they are found in its laboratory: But that ſort of concretion is chiefly owing to drier aliment and an inactive manner of life; ſeeing the craſſamentum of the bile, which ought to be excreted by the belly, is retained.

580. Moreover, the calculous concretions of various ſorts (576.), which are generated in the other juices and parts of the body, can be readily underſtood and explained from theſe, rightly applied (568. 579.).

581. But in whatever part of the body they are lodged, the property, by which they injure, is merely mechanical, and produces effects very manifeſt; the bulk, for inſtance, hardneſs and weight, ſqueezes, compreſſes, and bears down the parts in vicinity, and obſtructs the canals: Whence an intercepted

tranſit of the humours, circulation, ſecretion and excretion is diſordered and impeded. The motion, alliſion, and friction, grind and irritate the tender ſolids, extract the humours, and lacerate the veſſels: thus pain, heat, inflammation, ſuppuration, gangrene and callus are produced. The conſtant increaſe of the calculus too, while it remains in the body, augments theſe evils. Theſe, indeed, if applied to particular parts, to their functions, and mutual ſympathies, point out the origin of very many affections of great moment.

The animated Morbific Powers.

582. ALL things are full of animal life. The air, water and earth, the common habitations of nature, every-where abound with living creatures. The number of the ſmaller animalcules is eſpecially ſurpriſing, and the power of multiplying themſelves is greater in proportion as they are more minute. The ſame alſo poſſeſs the higheſt degree of voracity, and a wonderful ſagacity and induſtry, as well in procuring food as in nidification. Whence it happens, that they not only prey upon all ſorts of vegetables, but even lodge and feed upon the greater animals, and by their ſmallneſs and number protect themſelves againſt the ſtrength of theſe.

583. Various, therefore, are the ways by which injuries can be induced upon the body by theſe enemies; unleſs, when admitted, they are timeouſly deſtroyed and thrown out. The ſurface lies open, to which they affix themſelves, and by the pores of the ſkin, or the little wounds inflicted, inſinuate themſelves and their ovula. Nor are there

wanting external paſſages, by entering which they may come into the interior parts. Chiefly through the vehicles of air, of meat and of drink, the organ of firſt digeſtion is eaſily infeſted.

584. It is therefore found, by the obſervation of practitioners, that various kinds of animals are lodged in the body both outwardly and inwardly; and that there is not any part of it, either internal or external, altogether free from this burden; but thoſe parts into which there is eaſieſt acceſs externally, are comparatively more crouded.

585. Concerning theſe animalcules, which are manifeſt on the outſide of the body, if they are found internally, there is ſcarce a doubt remaining with any one but that they have come thither from without, either already evolved, or as yet latent *in ſemine*, which, having got into a favourable ſtate within, at laſt produces an animal *ſui generis*.

586. But ought the origin of the lumbrici of the inteſtines, the plani, teretes, and aſcarides to be ſought for elſewhere? Becauſe they are, as it were, common and familiar to the inteſtines of animals, eſpecially of the human kind, and ſeldom or never are found in another place. Have they an equivocal birth from putrefaction? Are they owing to the arbitrary faculty of the *ſpiritus mundi*? Or have they rather been connate with the human race from the beginning, and propagated by tranſlation, as it were, in the ſame body? Are they really generated from a ſemen, not their own, or from foreign inſects, which having got into the body, and, on account of the difference of their food and other circumſtances, degenerate into a different ſpecies? All theſe opinions are too

repugnant to the common laws of generation, which, by an accurate obſervation, have been diſcovered in the greateſt, as well as in the ſmalleſt animals, to be admitted.

587. Seeing, therefore, theſe worms preſerve both their own genera and ſpecies, and only harbour in the *primæ viæ* (583.); and according to the difference of age, ſex, temperament, manner of life, the air, meat, drink, climate, ſeaſon of the year, &c. infeſt ſome more than others, ſome very little, or even not at all; the ſame ſort, however, not infeſting individuals, but this perſon the teres, another the aſcarides, others again the tenia: Analogy perſuades us, that the ſame can be conveyed into the body from without (583.); that they have a ſimilar origin with the former (585.), and multiply themſelves internally in the manner of other animals, unleſs they are ſubdued by the robuſt powers of nature. But although this opinion is embarraſſed with its own doubts, from which it can hardly be freed, theſe, however, are not of ſo great moment that it may not be allowed to hope; but, upon a farther inveſtigation, it may at length become more explicit. That ſyſtem, which nature herſelf hath pointed out, ſhould not be haſtily rejected, although perhaps it is partly defective, through the narrowneſs of the human underſtanding.

588. Health indeed, often admits of ſuch gueſts without inconvenience. It is not ſeldom, however, they prove hurtful in many ways, eſpecially when they occupy the interior parts. Hence there are produced in the *primæ viæ*, from the bulk, number, and conglomeration of the worms, weight, obſtruction, and ileus; from their motion, creeping, ſuction, and the irritation of the nerves, nauſea,

ſea, vomiting, ſighing, anxiety, inordinate motions of the ſtomach and inteſtines, ſpaſms, eructation, flatulency, borborygmi, various pains of the belly, tumours, a diſordered coction of the aliment, an impeded abſorption of the chyle, irregularity of the belly, ſometimes bound, at other times looſe; and ſometimes a ſupervening eroſion, excoriates, inflames, exulcerates, and perforates: From the conſumption of the chyle, hunger, and bulimy; the ovula of the worms, recrements, and carcaſes, inviſcate and accumulate the natural mucus, inſpiſſate and corrupt the menſtrua of firſt digeſtion, and by heaping up one feculency upon another, diffuſe the corruption far and wide.—Theſe are only the topical evils.

589. But from the great conſent which obtains betwixt the alimentary canal and the whole body, it happens that the other parts are at the ſame time affected. For the ſubſtraction of the nutriment creates emaciation, paleneſs, debility, and atrophy. The vitiation of the chyle, not duly concocted, nor rendered pure, and likewiſe corrupted by the mixture of heterogeneous matters, conveyed into the ſecond paſſages, degenerates into a cacochymy and cachexy. Finally, the irritation extending itſelf every where, by means of the inſtruments of ſenſe and motion, and their powers, can induce all ſorts of ſpaſmodic affections. Hence a diſturbed circulation of the humours, palpitation of the heart, a ſmall pulſe, feeble, intermitting, diliquium animi, horripilation, fever, various ſorts of pain, vertigo, dimneſs of ſight, tinnitus aurium, terrifying and troubled dreams, terrors, delirium, aphonia, palſy, catalepſis, apoplexy, tetanus, eſpecially convulſive motions, and epileptic attacks, very ſurpriſing.

590. From theſe it will be readily known (588. 589.) what ſort of evils may be produced, when any kind of living animals are lodged in other parts of the living body, either external or internal (584.).

Of other Things, which, applied externally, prove hurtful.

591. MANY things beſides, by accident or deſign, are applied to the body externally, or light upon it, not comprehended under any of the preceding titles, which, by no means however, ought to be omitted, becauſe they may have a principal ſhare in producing diſeaſes.

592. Clothes, which cuſtom, rather than nature, has rendered neceſſary for man, by their bulk, weight, and ſtructure, compreſs the parts which they inveſt, ſtraiten the veſſels, reſiſt the propelled humours, repel thoſe contained, and compact the fibres of the ſolids. If, indeed, they have been uſed with a due reſerve, they prove the means of augmenting the ſtrength and vigour of the vital circulation, the mutual action of the containing parts and contents, attrition and native heat (433. 434.); they ſuſtain the teguments, nerves, fibres, and muſcles; hence they are very ſalutary to the debilitated. But an immoderate preſſure, according as it is in degree, induces very many, and very different evils. From whence the inflammatory diatheſis in the humours (367.), putreſcency; an impeded return by the veins, and influx by the arteries; interception of the nervous influence; defect of nutriment, conſequently of nutrition and an equable growth; degeneracy of the matter of the ſolids; various coalitions of the ſame (209. VI.). While the parts expoſed to preſ-

ſure ſuffer theſe things, the contrary happens in the reſt; an afflux of humours, accumulation, increaſed impetus, diſtenſion of the canals, anaſtomoſis, diapedeſis, diæreſis (203.), all kinds of aberrations of the fluids (397. *et ſeq.*), immoderate increaſe (261.), various tumours, abolition of the proportion and equilibrity between the parts, powers, and actions, &c. Whence anxiety, pain, inflammation, gangrene, ſtupor, paralyſis, apoplexy, hæmoptœ, bloody urine, abortion, various vitiations of conformation, ſituation, and connection are produced, eſpecially in tender and delicate bodies.

593. The ſame form a medium between the atmoſphere and the ſkin, which being warmed by the heat of the latter, reſtrain the cold of the former, ſoften the parts heated, and, by attracting the humours, make a derivation from other parts. As things under this denomination are often very advantageous, ſo at other times they are exceedingly prejudicial (424. 425.). It is of conſequence however, whether the materials of which they are made are ſilk, linen, leather, wool, feathers, or hair; for all of theſe are not equally retentive of heat.

594. They likewiſe imbibe and retain moiſture, more or leſs; more indeed, if they are made of animal ſubſtances than of vegetable. Thus, they act differently upon the cuticular veſſels, and by their ſuction or repulſion, in many ways vary, augment, or impede the cutaneous abſorption and excretion, not always innocently. A more frequent or intermitted change of apparel, not a little tends to the ſame effect likewiſe.

595. From theſe things (592. 594. collated with 428. 445.), is it underſtood, why the un-

ſeaſonable change of winter or ſummer clothes, or a ſudden denudation of the covered parts, or a neglected accommodation of the external coverings to the viciſſitudes of the air, often occaſion ſo many and ſo great evils, eſpecially to thoſe unaccuſtomed? And what may be effected by beds, cuſhions, ſwaddlings, and ligatures.

596. Liquid, ſoft, or ſolid epithems, which are ſo often applied to different parts of the body, not without benefit, ſometimes, however, prove hurtful from the coldneſs, heat, preſſure, humidity, ſiccity, particular efficacy of their ingredients, penetrability, time and manner of application, and different conſtitution of the parts to which they are applied. By a parity of reaſoning, the effects of baths may be inveſtigated.

597. But unctuous ſubſtances of various denominations, applied externally, and uſed by way of ointments, in the firſt place can prove injurious by their emollient effects, and ſuppreſſing the tranſpiration by cloſing up the pores; then, if they have been of an acrid nature, by creating irritation, and extracting the humours. Whence pain, inflammation, fever, eryſipelas, puſtules, &c. Neither does their viſcoſity leſs prevent them from being abſorbed and entering the body; and the ſtimulus being widely diffuſed, they implant the effects peculiar to themſelves through the whole body, or in parts ſituated at a diſtance, with an effect much varying, hardly to be removed again.

598. Moreover, whatever things impelled with an external force light upon the body, or too obſtinately reſiſt its motion, by diſordering the coheſion, ſituation, and connection of the parts by their mechanical action, are wont to create diſeaſes, chiefly

of the organic kind (212.), fractures (217.), wounds (218.), luxations (226.), hernias (230.), prolapſes (248.), vitiations in reſpect of number (258.), conformation (259.), magnitude (260.), and the various conſequences of theſe. The bulk, therefore, weight, figure, celerity, and direction of the impelled body, compared with the coheſion, texture, poſition, &c. of the part affected, determines the manner and degree of leſion.

599. To this head may likewiſe be referred the injuries, which, from a difficult birth, an unſkilful obſtetrication, rudeneſs and negligence of nurſes, happen to infants, by compreſſing, racking, ſqueezing, diſtorting, concutiating and wounding, which are the worſe on account of their tender little bodies being leſs capable of reſiſting. Neither is the *fœtus in utero* altogether free from ſuch ſort of violence.

600. But from hence we muſt not underſtand the remarkable effects in changing the body of the fœtus, which are commonly aſcribed to the force of imagination in the pregnant mother, nor the morbiferous power, which is related concerning witchcraft. Is therefore the nature of both the ſame? Are they equally to be credited?

601. When fire acts upon any part of the body with a greater force than it can bear, by the more vehement motion, expanſion, effuſion, diſſipation and exſiccation of the humours, ſhriveling of the fibres and the ſmaller veſſels, the diſſolution of all of them into an irregular eſchar, can ſuddenly produce ſingular degrees of inflammation, even to the moſt cruel ſphacelus.

602. Sometimes extraneous and ſolid ſubſtances are admitted into the interior parts of the body,

which,

which, when they cannot be digeſted by nature, nor conveniently paſs, or be again ejected, ſooner or later are rendered noxious. Of this ſort are bones, ſmall ſtones, needles, pins, huſks, metallic fragments, bits of glaſs, hairs, greater pieces of chaff, and the like, which are ſometimes let in by the natural paſſages, opening externally, at other times by wounds.

603. Theſe injure by their bulk, weight, hardneſs, figure and motion, by obſtructing, weighing down, compreſſing, irritating, grinding and vulnerating: But if they are of ſuch a nature as to be diſſolved by the humours in which they are ſoaked, they are likewiſe wont to diffuſe themſelves more widely, and by a particular efficacy prove hurtful. Nor is it uncommon for earthy, droſſy, mucous coagulations to adhere to theſe: thus are produced concretions of various ſorts (568. 570. 571.).

604. According, therefore, to the diverſity of the parts which they occupy, they ought to produce all ſorts of effects. When immerſed in the fat by a wound, often for years innoxious, upon having variouſly changed their ſeat, they are at laſt thrown out, or by their irritation inflame, ulcerate, or bring on unexpected hæmorrhages internally, convulſions, palſy and ſudden death. When impacted in the larynx, or thruſt farther down into the trachea arteria, they ſuddenly ſuffocate, or by a violent cough, inflammation, exulceration, and conſumption, gradually kill. When ſwallowed, while they ſtick in the fauces, œſophagus, ſtomach, pyloris, and inteſtines, they differently diſorder this laboratory. Whether or not are they carried ſometimes from the *primæ viæ* into the veſica urinaria, and by what way?—Whatever ſubſtances, at any time detained,

tained, are waſhed by the urine, they contract calculous cruſts by their delay (570.). Nor is it doubtful, what miſchief they muſt create, when let into the noſe, eyes and ears.

605. And theſe, indeed, are the principal noxious powers, amidſt which the human body is placed: But as many of them conſpire among themſelves in the faculty of hurting, on the contrary many counter-act one another; ſo that the miſchiefs which they may produce muſt neceſſarily be heightened, mitigated or deſtroyed, according to the concurrence of ſimilar or diſſimilar powers.

Of the Seeds of Diſeaſes (75.).

606. THAT the ſeeds of diſeaſes, not leſs than the noxious powers, multifariouſly differ from one another, the mutual affinity (75. 78.) which is required between the former and the latter, and the great number of diſeaſes which by their united force they produce (120. to 418.), diſcover. They therefore deſerve a particular conſideration in this place (79.).

607. There are, according to nature, exiſting in the body very many affections, neceſſarily connected with the principles of life and health themſelves, by which it happens, that the human body cannot reſiſt the impreſſion of certain powers, and in this way may be ſaid to be naturally diſpoſed to diſeaſes. I call theſe therefore the natural ſeeds of diſeaſes.

608. Some of which, indeed, every-where, and always obtain in every perſon, and are therefore common to the whole human race; but ſome are proper, which are only found in particular perſons,

nor in the ſame at all times, or conſtantly in the ſame manner.

The natural Seeds of Diſeaſes, common.

609. Of thoſe that are common the principal are, a coheſion and connection of the firm parts of the human body not indiſſoluble; ſuch a quantity and texture of the juices as is eaſily ſuſceptible of change; the number, ſoftneſs, ſubtilty and involution of the canals; a ſurface having every-where open paſſages; a principle of life exceedingly ſenſible (171.) and evaneſcent (187.); the general foundation of all and every one of the functions conſiſting in a harmony of motions; the wonderful ſympathy and conſent, as well of the whole compages as of the oeconomy; laſtly, the ſtated laws of the mutual intercourſe of the mind and body, not always to be varied at diſcretion.

610. He who compares the nature of man thus conſtituted with the various efficacies (419. 605.) of thoſe powers, to which it is expoſed by the functions of life, eaſily perceives, that it is not only unfit to repel all injuries, but it even has a tendency to favour their operation.

The natural Seeds of Diſeaſes, proper.

611. As the latitude of health admits many differences, ſo every ſound perſon has ſomething peculiar to himſelf from the conſtitution of nature, by which it happens, that as he is more liable to certain diſeaſes than others, and therefore leſs able to reſiſt the occaſional cauſes of theſe, it will not

be improper to refer them among the ſeeds of diſeaſes (75.).

612. Different ages, which vary the period of human life, belong to this place. According to the law of nature, man is born, grows to maturity, endures for a ſeaſon, decays and dies. To every one of theſe ſtates there is a congruous degree of health: but in individuals there is a great difference of the parts, faculties and propenſions, as well as of the mind as of the body. From this, therefore, the diatheſes ought to proceed, which render every age ſubject to different diſeaſes.

613. In ſex the diſſimilitude is not leſs; whether we conſider the parts, which both the male and female have proper to themſelves, the habit of body in general, or the whole oeconomy. Hence, as the health proper to the male is different from that of the female, ſo the diſeaſes proper to every one are maſculine or feminine, to which, by their ſex, they are more diſpoſed. The number of the latter is ſo much greater, as the functions incumbent upon the more delicate ſex are proportionally ſo; ſo that the womb in women has been ſaid to be the cauſe of ſix hundred evils.

614. Temperament ſuppoſes a certain diſpoſition and proportion in the ſolids and fluids of the human body in the ſound ſtate, and a limited degree of the motive powers, whence flows the particular tenor of the functions, which, while it does not exceed the meaſure of health, is very different in different conſtitutions. As this great difference induces ſo many deviations from one ſtate of health, the moſt entire, ſo the different degrees of proximity to the morbid ſtate are not fewer. From which it follows, that every temperament has a

tendency to that kind of diſeaſe, to which it neareſt approaches, and conſequently may not be improperly ſaid to contain the ſeeds of it.

615. The nature of idioſyncraſis, and of the peculiar habit of particular parts, is the ſame, by which theſe differ from the general temperature of its own body, by a diſcrimination for the moſt part ſcarcely obſervable, unleſs by certain effects, and not diſordering the oeconomy in other reſpects. Hence often riſes the wonderful ſenſibility, by which the power of things, which ſome eaſily bear, becomes hurtful to one among thouſands.

616. But the chief part of theſe ſeeds (611. to 615.) ſeems to have their ſeat in the vital principle (170.), becauſe, ſeeing it is widely diffuſed over the whole body (175.), and is endowed with a large conſent (178. 179.), and claims a principal ſhare in every function whatever (180.), if it in any degree, in a perſon otherwiſe ſound, has been more torpid or agile, it is not to be doubted, that it can very much aſſiſt the noxious powers in the generation of diſeaſes (195. 199.). And health admits of great difference of the vital virtue, as well in the whole body, as in particular parts (176. 177.).

The Seeds of Diſeaſes which are Preternatural.

617. THERE is beſides a vaſt number of thoſe things, which, whether congenite, or contracted after birth, preternaturally cleave to the body, ſo as to be able, ſeeing themſelves are morbid, to produce different diſeaſes, when likewiſe excited by the noxious powers: hence they are deſervedly reckoned among the ſeeds of diſeaſes.

618. Thither indeed are, in the *firſt* place, referred occult affections, which, although they diſcover nothing very vitiated in any part or faculty of the body, nor do not even belong to the natural ſeeds, common (609.), or proper (611. to 616.), notwithſtanding occaſionally evidence their noxious powers, by breaking out into manifeſt diſeaſes. Of this ſort hereditary diatheſes ſeem to be, and alſo thoſe contracted in the mother's womb, or from the milk of the nurſe, which, like ſeed, lie concealed often for years, without any ſenſible tabefaction or leſion of function, but, in their due time, having at laſt obtained conditions favourable to their evolution, ſpring up into ſpecies of diſeaſes analogous to themſelves. They are therefore to be reckoned morbid, ſeeing they are not comprehended in the general differences (611.) of health: Although an alienation of this ſort, when preſent in individuals, is not ſufficiently evident, the nature of thoſe diſeaſes, which make their courſe by acceſſions and intermiſſions, is perhaps the ſame.

619. There is another kind of intermediate affections, which indeed are really preternatural, and diſcover themſelves ſuch by their characteriſtic marks; they, however, are not ſo conſiderable as to be commonly reckoned diſeaſes (123.), ſeeing they do not diſorder the functions (38.). Sometimes, therefore, they are ſuſtained for a long time without injury, and for the moſt part by Pathologiſts are better ranked among the cauſes of diſeaſes (58. 123. 124.); until advanced by their own progreſſion, or aſſiſted by the acceſſion of other ſeeds, or noxious powers, they at laſt produce real and manifeſt diſeaſes.

620. The more ſimple affections, one and all, above enumerated (125. *et ſeq.*), belong to this place, as many, either by their own powers, or complication with others, have not proceeded to that pitch, as manifeſtly to diſorder the functions of health; but which only render the body more prone to ſickneſs. Of this ſort are debility and rigidity of the ſolids (157. 164.), irritability and torpor (190. 196.), ſome diſeaſes of the cavities (202.), as alſo the organic (213.); but eſpecially vitiations of the fluids, as well abſolute (269. to 302.) as relative (383. to 412.). Theſe are ſo many ſeeds, which ſooner or later, occaſion being given, are able to bring forth diſeaſes *ſui generis*; as is to be ſeen in the places cited. Neither, truly, do plethora and cacochymy altogether exhauſt this ſource.

621. There is a third genus of manifeſt vitiations, which, as they openly declare themſelves by morbid effects, ſo either ſpontaneouſly, or by the concourſe of other powers, can they degenerate into other diſeaſes, different in ſpecies, by no means to be confounded with the ſymptoms (97. 105.). Theſe that are under this denomination, ought, therefore, to be wholly ranked among the ſeeds of diſeaſes, becauſe they form a prediſpoſition to an affection *ſui generis*; although they themſelves are not undeſervedly reckoned among diſeaſes. The natures of the more ſimple diſeaſes, formerly (150. to 412.) expounded, abundantly ſhow this by their effects; ſeeing, from the greater number left to themſelves, others different are wont to break out: Hence are underſtood anomolies of diſeaſes, and terminations in others. Nor is this a ſmall part of thoſe things which are

required for rightly inſtituting the diagnoſis and prognoſis in practice.

622. Wherefore it is evident, that many of the ſeeds, which are preternatural, are introduced into the body by the action of the noxious powers, and conſequently are the effects of theſe, as in the order enumerated above (419. 605.); and that the ſame thing, as it is differently viewed, can be regarded as a noxious power, the ſeeds of diſeaſe, or a diſeaſe itſelf.

Of the different Conſtitution of Morbific Cauſes.

623. THUS we are at laſt given to underſtand in what a multiplicity of ways the true cauſes (62.) of diſeaſes are conſtituted. For although it is common to all to be produced from noxious powers and prediſponent ſeeds concurring (77.), yet theſe principles themſelves are of a very different origin, and ſome do not always aſſociate themſelves with others in the ſame manner.

624. In the *firſt* place, many of the noxious powers are endued with ſuch efficacy, as not to require the aſſiſtance of any thing to conſtitute the cauſe of the diſeaſe, except the natural ſeeds, common (609.), or proper (611.); hence immediately throw thoſe that are otherwiſe very ſound into diſeaſe. Mechanical powers (598.), fire (601.), poiſons (486.), and many others belong to this place.

625. But, if a perſon cheriſhes within him the ſeeds which are preternatural (617.), the non-naturals, although innocent, are able to grow with theſe into the cauſe of a diſeaſe; ſo that the principal part of the diſeaſe then ſeems to be owing rather to the ſeeds than to the noxious power.

626. But

626. But ſeeing the noxious powers are wont to create morbid ſeeds likewiſe (622.), which being produced, then, by concurring with others, at length terminate in diſeaſes, it is manifeſt, that the ſame alone, by a long continued action, can induce whatever is required to conſtitute diſeaſe, although there has been no antecedent ſeminal vitiation. Thus an incongruous uſe of the non-naturals not unfrequently overturns the moſt entire ſtate of health.

627. Sometimes it is neceſſary that ſome of the natural ſeeds, proper (611.), accede to thoſe that are morbid, by which they, as it were, ripen, and are rendered fit for generating diſeaſe, if a noxious power has ſupervened. We learn this from hereditary ſeeds, which grow up with a perſon to a certain age, before they unfold themſelves.

628. The origin of thoſe diſeaſes is various, which are produced from other diſeaſes, as if from their own ſeeds (621.). For ſometimes a primary diſeaſe, left to itſelf, converts itſelf by its own power into another genus, when aſſiſted by the particular conſtitution of the perſon, or part, which it occupies. Sometimes it is the work of nature, while the motions (98. *et ſeq.*) of which ſupervene upon the diſeaſe, it behoves this to be changed. Sometimes a proper or incongruous cure, or the concurring power of the non-naturals by chance or deſign induces a change. The matter of the diſeaſe likewiſe, being favourably or unluckily transferred from its own ſeat to other parts, can, according to the diverſity of theſe, vary the diſeaſe. Sometimes the ſymptoms become noxious powers, which bring one diſeaſe upon the back of another (97. 105. 109.). Not unfrequently the remaining effects of a diſeaſe in ſome meaſure cured, whether it hath been a morbific

matter, a vitiation induced upon the ſolids or fluids, or ſome tabefaction of the motive powers, form a prediſponent ſeed, which, when neglected, upon a ſlight occaſion again breaks out into diſeaſe. It likewiſe happens from ſympathy and conſent (609.), that the evil being diffuſed through different parts, diſeaſes ariſe from other diſeaſes.

629. But according to the multitude of the ſeeds which are in the body, the number of the noxious powers is both augmented, and the occaſions of poſſible diſeaſes are multiplied, and conſequently the tendency to indiſpoſition increaſed. Seeing, therefore, nobody is free from the natural ſeeds, as well common (609.) as proper (611.); theſe ought, by nature, to be moſt prone to diſeaſe, who have the greateſt ſhare of the proper and noxious, and beſides labour under thoſe that are morbid of every ſort (617. to 621.). Whence it is apparent, what forms the weak conſtitution, what the robuſt, what the valetudinary ſtate, and what the debility of a ſingle part; why the delicate, who adhere to a ſtrict regimen in the non-naturals, are often leſs indiſpoſed, and live longer ſound than the robuſt, who are engaged in daily exceſſes. Miſerable old age not ſeldom attends the diſſipation of youth, and contrariwiſe.

630. Moreover it is evident of how great utility this doctrine is to a phyſician proſecuting the art upon rational principles, for the rightly underſtanding thoſe things which conſtitute the preſent diſeaſe. Of what ſort it was, whether ſingle or compound; the origin and nature of which is ſcarce well underſtood, unleſs it has appeared from what noxious powers, as well as ſeeds, concurring with each other, it has proceeded. And although the con-

ſideration of the ſeeds may not be equally important in all, it is, however, in moſt; and the rather, becauſe diatheſes not merely paſſive, which only are ſuſceptible of the action of the noxious powers, are referred thither, but chiefly the active, the efficacies of which being only excited by the noxious powers, often far more powerful than theſe themſelves, ſometimes claim the whole diſeaſe, or at leaſt the greater part of it, to themſelves (51. 99. 102.). But ſtill leſs ought they to be neglected by practitioners, as they are engaged among the diſeaſes of individuals.

631. A medical examination of the ſick, therefore, upon which reſts the true knowledge of the nature of the diſeaſe (72.) not only ought to include particular claſſes of the non-naturals, and former manner of life, but likewiſe the whole conſtitution of the perſon, and whatever things in it are common, as well as proper, and thoſe which are according to, or contrary to nature. Thus, for inſtance, both kind of principles, by which diſeaſe is effected (630.), at laſt manifeſt themſelves. But if either lies hid of itſelf, it may ſometimes, nevertheleſs, be detected, by comparing any one of the known principles with the diſeaſe known by its effects. Thus, a noxious power often diſcovers a prediſponent ſeed, or the latter the former.

632. By this ſame method, the manner and direction of thoſe things, which muſt be done by a practitioner, is diſcovered, as well in poiſoning health as in the cure of the ſick. Health is not ſecure to him that does not take care leſt either ſeeds be generated, or when produced explicate themſelves. Nor is the diſeaſe fairly removed, until the whole concourſe of the conditions by

which it is nouriſhed be removed: But, as in diſeaſes much complicated or inveterate, this can very ſeldom be effected at once, the correction of ſome others ought to be undertaken, that the cauſe of the evil may be extinguiſhed, which cannot be ejected at one effort. Finally, if any morbid ſeeds remain which it is not proper to extirpate, it is neceſſary to palliate theſe by avoiding the noxious powers (59. 77.).

The Medicative powers of Nature.

633. Among ſuch a multiplicity of noxious things, ſeeing there are few people who live enough circumſpectly, we are apt to believe, that diſeaſes ſhould be much more frequent than obſervation teaches, and that health could not long continue intire to any one.—It does indeed contribute, but is not ſufficient, however, for averting diſeaſes, that there is required the concurrence of a prediſponent ſeed, and an analogous noxious power, in order to produce them, (75. to 78.), and when the occaſions which muſt concur are ſo manifold. It behoves therefore other cauſes to be joined, which it is worth while to conſider.

634. As human nature is impatient of, and averſe to diſeaſes and death (2.), ſo ſhe is provided with her own powers and inſtruments, by which ſhe may protect herſelf from them, which are placed in the body, as well as the mind; and, although different, conſpire all to the ſame end (18. 51. 99.).

635. The body, expoſed to the continual actions of life, is quickly deſtroyed by the motion of attrition, proper to its own parts. But it likewiſe delights in the nouriſhing faculty, by which it con-

ſtantly repairs the waſte, by appropriating to itſelf extraneous matter, and, amidſt the perpetual flux and mutation of its own matter, preſerves itſelf the ſame and intire. Thus the moſt certain remedy is oppoſed to an inevitable cauſe of diſeaſes and death.

636. Of the ſame order alſo is that wonderful faculty, which, by an inimitable artifice, conſolidates, repairs, and fills up the wounds, fractures, ulcers, bruiſes, and mutilations of the ſolid compages. Although that exiſts in a greater degree in ſome animals than in man, here, however, it is ſo conſiderable as to be deſervedly reckoned the foundation of all ſurgery.

637. Beſides, as the body, by its own powers, concocts and aſſimilates to itſelf the aliments, ſo, in like manner, it is endowed with the faculty of ſubduing and attemperating things morbid, and which are preternatural. This is that ſalutary πεπασμος, or preparation, by which the noxious ſtate of thoſe things which heighten or create diſeaſes, is ſo mollified, as either to become innocent, or fit for a commodious ejection. Whatever is ſalutary in the criſis of diſeaſe chiefly depends upon this virtue.

638. Among the principal effects of this faculty (637.), ſuppuration, the work of nature alone, deſerves to be reckoned ſuperior to any art, and the moſt excellent remedy againſt crude, acrid, inflamed, vulnerated, ulcerous, gangrenous affections, which cannot be otherwiſe cured.

639. There is, beſides, the higheſt utility of the emunctories here (209.), as, by their aſſiſtance, noxious things, or thoſe about to hurt, whether

they have been ingeſted or generated within, can be timeouſly ejected. Nor are ordinary means uſed, when a morbific matter ought to be expelled; but nature employs unuſual ways and means, as hæmorrhagy, vomiting, cholera, diarrhœa, ſweating, &c. plainly ſhew.

640. But the numberleſs motive powers, from which the living body derives its vigour, ſeeing they exert themſelves when irritated by noxious things, afford the principal protection to life and health. Upon theſe certainly depend the faculties already aſſigned (635. to 640.). From thence flow the automatous motions, irregular indeed in many reſpects, but often exceedingly beneficial, and by an eſtabliſhed determination tending to a ſalutary iſſue; although they happen when the mind neither inſtigates, nor is conſcious, but even reluctant likewiſe, conſequently can by no means be attributed to its counſel (51. 99. to 105.). If a perſon were without theſe, there would be neither permanent health, nor a cure for diſeaſe.

641. Among this ſort of motions, fever is to be eſpecially ranked. For as that commotion, hurtful by the circulatory ſyſtem being diſturbed, and the moleſtations of that ſymptom, not unfrequently brings on deſtruction, it is hence deſervedly called a diſeaſe; often, however, it is ſo remarkably ſalutary, that nature or art ſcarcely affords any more certain or powerful aſſiſtance, as well in curing as averting diſeaſes. Whence it is, that phyſicians are ſo immoderate in their praiſes of fever, who ſometimes regrete, that the power of exciting, rather than taking it away, has not been granted them.

642. There likewiſe accedes a conſent and ſympathy of parts and faculties (99.), by which they render mutual aſſiſtance to each other; ſome perform the office of others, and the ſound exert their medicative efforts for the afflicted, as the approaching or preſent diſeaſe can leſs reſiſt the joint powers of all theſe.

643. Nor is the human mind wanting in its endeavours that it may protect health in danger. For the uneaſy ſenſation from the impending evil, or the remembrance of what was formerly ſuffered, not only impells it to ſeek aſſiſtance, whether the evaſion of the known cauſe hath afforded that, or the advantage of the help found by experience, reaſon, or conjecture: But the mind likewiſe, diſturbed through fear of danger, conceives her own impetus, and excites motions in the ſyſtem of her own functions, which, although they may ſeem to flow from inſtinct, rather than from premeditation, do however manifeſtly diſcover a very certain deſign and efficacy of bringing protection or relief. Of this ſort are ſpontaneous motions of the muſcles which obey the will, preceding thought, not to be repreſſed at diſcretion; but eſpecially the determinate loathing of noxious things, which often obtrude themſelves contrary to deſign, or the appetency of thoſe that are medicative. By following which, impending diſeaſes are very often averted, and the refractory likewiſe cured.

644. Laſtly, there is the remarkable faculty of becoming habituate, in which both principles of man delight. If human nature wanted this, it would be the portion of few to enjoy health. Doubtleſs we are inured, by cuſtom, to bear many things

with impunity, which are injurious to thoſe that are leſs accuſtomed. But as we are much aſſiſted by cuſtom in the exerciſe of all the functions whatſoever, ſo this itſelf likewiſe diſpoſes every one of the medicative powers (633. to 644.), as well of the mind as of the body, to a facility of acting, by which they can oppoſe themſelves to things noxious, correct the miſchiefs induced by theſe, and more readily reſtore the parts affected to their former integrity. Thus, even diſeaſes, by habit, are likewiſe rendered more ſupportable and docile, and poiſons themſelves become mild. Is it then evident why, as appears from the oldeſt obſervation, things which are for a long time eſtabliſhed in the body by cuſtom, although worſe, are wont to be leſs hurtful than thoſe to which we are not familiariſed? Why accuſtomed diſeaſes are more mild? Why, beyond expectation, valetudinarians enjoy longevity?

645. This is the ſum of the natural remedies, which are in man, for his preſervation againſt very many cauſes of diſeaſes. By the virtue of theſe it is effected, that health is far more frequent than diſeaſe; that many are very ſeldom afflicted with diſeaſes; ſome even grow old ſometimes in an uninterrupted health; finally, a great number of the ſick ſpontaneouſly recover without the aid of the phyſician.

646. But they deſerve to be ſtill more accurately conſidered, when it is not doubted, that the art of healing not only took its firſt riſe from theſe, but depends ſo much upon theſe very powers of nature (18. 19.), that, without them, the moſt exquiſite addreſs of all phyſicians could not preſerve any one

ſound,

ſound, or heal the ſick. He who can direct the ſame ſkilfully attains the height of the art.

647. And ſeeing theſe are eſtabliſhed from perpetual obſervation, they are by nobody brought into diſpute. But concerning the principles from whence they flow it is eagerly contraverted—whether they are partly owing to the body, partly to the mind, or wholly to this alone? Both opinions have many great men their favourers, who have diſputed the matter with great heat; but neither could conquer their adverſaries, nor themſelves be overcome. Whence it appears, that the reaſons adduced on all ſides are not altogether improbable, but ſuch as cannot be evidently demonſtrated; conſequently that the contraverſy, which conſiſts in mere opinions, cannot be decided; nor is there any hope that it will ever be intirely removed, while we remain in ſo much ignorance of the powers and fabrication of the body, of the nature and faculties of the mind, and of the foundation and laws of the mutual intercourſe which obtains betwixt them.

648. We would be inclined to think, that the arguments of thoſe are the moſt plauſible, who contend that both principles are endowed with their own power of acting, if we conſider, that there are many motions performed in us (640.), not only without the conſent of the mind, but even while ſhe is unwilling; on the other hand, thoſe ſhe anxiouſly deſires cannot be effected, and that others, from ſome cauſe or other ſuppreſſed, can by no means be excited at her command, but very eaſily by corporeal ſtimuli: That it is evident from the ſurviving vital power (169. 181.) in parts cut

out of the living body, that there are in the body motive powers which do not depend upon the mind: Moreover, that a perſon of underſtanding differs very little in this reſpect from an idiot, or an adult from an infant; and that there are likewiſe given to brute animals ſuch a kind of inſtinctive motions: Nor are even vegetables without the ſame; neither are they always ſo rationally directed as not to be frequently very hurtful (104.); finally, in exciting theſe very motions themſelves, which, without doubt, pertain to the mind (643.), that ſhe is not more able of herſelf, than in ſtirring up perturbations or paſſions (532. *et ſeq.*), and that her deſires and averſions are not only produced without deliberation, but, as it were, reluctantly obtruded from the bad diſpoſition of the body, according to a law preſcribed by the ſenſes, by which determinate cogitations, conſtantly the ſame, are raiſed in the mind, purſuant to certain corporeal changes.

649. Seeing all theſe things, and many others, are neither ſufficient for convincing thoſe who think otherwiſe, nor can be refuted by ſolid argument, it remains, that every one embrace that opinion which ſeems moſt conſiſtent to himſelf, or, what perhaps would be more adviſeable, leave the matter undetermined, never hereafter to be agitated by Pathologiſts, or at leaſt by practitioners, until more light is derived from Phyſiology. Is it then a matter of greater conſequence, whether, according to Hippocrates, nature is called the curer of diſeaſes, or, according to others, the ſoul or *archeus*, when they who perceive differently concerning theſe things, do however reſtore mankind to the ſame ſtate of health, and can even agree in the method of cure?

Of

Of the Symptoms ſingly.

650. SEEING the ſymptoms make up a part of the morbid ſtate, very manifeſt as well to the ſick perſon as the phyſician (88.), it would ſeem, that no labour was neceſſary for knowing theſe, being ſuch circumſtances as ſpontaneouſly offer themſelves to the ſenſes. Neither, truly, would there be any neceſſity, if it were ſufficient to know what things are joined, nor if a nearer inſpection of the ſame were required.

651. They particularly contain the ſource from whence are drawn what things are neceſſary for detecting the nature of the diſeaſe, and making the diagnoſis and prognoſis (45. 111. 117. 118.). It therefore behoves a phyſician, who intends to make a right uſe of the ſame, to underſtand the cauſes, ſeats, and various relations of each to the diſeaſe.

652. Add to this, that compound diſeaſes likewiſe, when they are conſidered in their ſymptoms (417.), by the different concurrence of which they manifeſt themſelves, require a diſtinct knowledge of theſe, that they may be fairly explicated.

653. A rational Pathology, therefore, ought chiefly to deliver a regular expoſition of all and each of the ſymptoms of any importance, in which may be found, when required, what the nature of every one is, their different origin, and what parts or faculties in any one are affected. Nor, otherwiſe, can the various complications of the ſame, although very accurately digeſted, be either rightly expounded or underſtood.

654. But the vaſt number, as it might create confuſion in arranging them conveniently enough, however, when taken into the threefold diviſion, long ſince eſtabliſhed, is reduced to impeded actions, vitiations of the excretions, and alienated ſenſible qualities (119.), a greater or leſs ſimplicity, and the mutual connection of ſome with others, can without difficulty determine the further diſtribution of ſingle claſſes. We ſhall therefore premiſe the vitiations of the ſenſible qualities.

The alienated Senſible Qualities.

655. WHATEVER, beſides the actions and excretions, the phyſician, by the help of the ſenſes, perceives changed from the natural ſtate by the force of the diſeaſe on the body of the ſick perſon, that ought to be referred to this head. There are very many of this ſort, which, although they incommode ſometimes little or nothing, ought however to be taken notice of and underſtood, that the cauſes lurking internally, and the diſeaſes from which they flow, may be known. We ſhall only touch upon the principal.

656. The colour of the ſurface of the body which is expoſed to the ſight, conſiſting of the mixed colours of the integuments, and of the tranſlucent juices which are immediately under, and likewiſe the ſolids, as it exhibits a great variety even in the ſound, is, on that account, more liable to the cauſes of vitiation. An intercepted, or too great influx of humours, various aberrations of the ſame circulating (399.), impacted (400), effuſed (402.), ſecreted (405.), nouriſhing (404.), many

ny cacochymies, the texture changed by πεπασμος, *i. e.* coction (637.), by admixture, ſeparation, coagulation, attenuation, corruption; a vitiation of the ſubſtance of the integuments itſelf, or of the parts lying under, very much tend to this effect. Whence every kind of morbid diſcoloration, into pale, red, yellow, green, livid, purple, brown, or black, can be explained, whether it obtains univerſally, or only in a ſingle part.

657. An acid, putrid, rancid, or rotten fœtor, preternaturally infecting the breath, perſpirable matter, ſweat, ſpittle, other excrements, humours, or parts, from ſuch a multiplicity of matter and cauſes produced, become evident from what has been delivered (307. 310. 312. 313. 314. 325. 327. 328. 375.).

658. The native heat of the ſound body, the attendant of the vital circulation, to be eſtimated by the exceſs above the heat of the atmoſphere, if heightened to an immoderate degree in diſeaſe, ſuppoſes a vehement impetus of the humours, great reſiſtance of the veſſels, redundance of the blood, a denſe texture, and the inflammatory diatheſis of the ſame (355. 367.), or too unctuous (356. 364.), an acrid cacochymy, putreſcency, rancidneſs, an increaſed vital motion (170.); hence incitements are ingeſted and applied externally, or excited inwardly (171.). It is likewiſe further augmented, when external heat, or a prohibited ventilation, has acceded. It may therefore, according to the number, intenſity, duration, and ſeat of the concurring conditions, more or leſs exceed, and occupy the whole body, or a part only. Whence it is evident, that it is not an unfrequent ſymptom, and attends not

a few diſeaſes. But the effects which it produces are perceived from (424. 425. 466. 467. 509. I.).

659. Hence ſpontaneouſly flow whatever things pertain to the underſtanding of diminiſhed heat. Nor do the cauſes and conſequences of an alternate heat and cold lie hid, or its inequality in different parts of the body at the ſame time.

660. Whether or not can any morbid affection excite in a perſon electrical fire, which manifeſts itſelf by a luminous ſhock, when extraneous bodies approach into contact?—A very late inſtance has given the ſuſpicion of a ſymptom hitherto unheard of, but hath not, however, been confirmed by more.—To this head ought likewiſe to be referred ſpontaneous burnings of the body, and even its reduction to aſhes by conflagration, which are related in medical hiſtory?

661. A morbid hardneſs of the parts is produced from rigidity (164.); a dry temperament (386.); contraction (209. V.); aberration of the nutriment (404.); diſtenſion from redundant humours (385. 387. 394.), exceedingly agitated (409.), inſpiſſated (282. 284. 367.), congeſted, impacted (209. I.), digreſſing (400. 402.), or concreted obſtruction of the emunctories, luxation (226.), hernia (230.), fracture (217.), various tumours, &c. Things oppoſite to theſe induce ſoftneſs. A greater or leſs renitency than ordinary, which, as a ſymptom, attends an increaſed or diminiſhed elaſticity, is thence likewiſe underſtood. Nor is the nature of too great humidity and ſiccity obſcure, which diſeaſes ſometimes induce.

662. The ſurface of the parts may be faulty by a morbid levity, when the integuments harden into

callus, or are immoderately diſtended by the contents; or when the ſmaller veſſels, which were turgid with plenitude, having collapſed through defect of the vital influx, ſubſide. On the other hand, a ſubduction of the diſtending juices, turgeſcency of the veſſels, from the humours being propelled in too great quantity, or, on account of the conſtricted orifices, hindered from paſſing, eroſion from acrimony, degeneracy of the ſubſtance, various eruptions, &c. occaſion an inequality.

663. A preternaturally increaſed or diminiſhed magnitude of the body, or of a ſingle part, although it ought to have been enumerated above (260.) among the organic diſeaſes, is, however, more frequently a ſymptom than a diſeaſe; and therefore merits a place among the vitiations of the ſenſible qualities (262. 263.).

664. Exceſs, the attendant of tumours of every kind (262.), which either occupy the whole ſurface of the body, or a particular part, either ſuppoſes an increaſed expanſion of matter, or a redundant quantity, and depends upon an immoderately increaſed proportion of the contents to the containing parts, and is, for the moſt part, underſtood from the doctrine of diſeaſes of the containing ſolids (200. to 211.) rightly applied. It accompanies fractures (217.), luxations (226.), hernias (230.), prolapſes (248.), aberrations (256.), bad conformations (259.), luxuriancy in exoſtoſis, condyloma, ſarcoma, and fungus. It is alſo the conſequence of diſtenſion, from rarefactions, obſtructions (209. I.), redundance of humours (385. *et ſeq.*), from various cacochymies, aberration of the humours circulating (399.), impacted (400.), effuſed (402. 403.), of

the nutriment (404.), a too great afflux into one part (411.), ſtagnation (410.), an impeded reflux, &c.

665. A diminiſhed quantity depends upon the contrary conditions; paucity of the juices (393. 395. 396.), a deficient influx (411.), collapſe of the ſolids, contraction (209. IV. V.), and eroſion, chiefly tend to this. Whence it is attended by exceſſive evacuations, emaciation, conſumption, *atrophy* of the whole body, or a part only. The diminution either of the whole habit, or of particular parts which were ſwelled, which manifeſts itſelf ſuddenly in diſeaſes, is chiefly remarkable. Spaſm forcing the humours inwards, κενεαγγεια, or depletion, a languid or ſuſpended circulation, declenſion of the *vis vitæ*, metaſtaſis and gangrene, are then commonly wont to be among the cauſes.

Vitiations of the Excretions.

666. THE excretions may indeed be vitiated in many ways, whether regard is had to the manner of excretion, the part from whence it is excreted, or, finally, the appearance of the matter. There are very many of theſe, however, not ſo proper to this title, but that they may be more fitly referred to another. Not a few of them truly merit the name of a diſeaſe, already expounded above (401.) among the aberrations of the humours. A greater number pertain to the cauſes of diſeaſes, formerly delivered in their own place, likewiſe (555. *et ſeq.*). Others, although they have the nature of ſymptoms, are more properly ranked among impeded actions, becauſe not that which is excreted,

but the excretion itſelf, is faulty. Concerning the vitiations of retention, which are uſually remarked by authors in this place, the ſame things prevail. Seeing, therefore, an exceſſive or deficient quantity of excreted matter may be conveniently treated of among the leſions of excretions, only ſuch things remain to be here exhibited, as, in the qualities of the excretions, diſcover themſelves changed from the natural ſtate; and many of theſe are already delivered in various places (401. 555. 566. 582. 602.): But, ſeeing all and each of them have a principal uſe in the doctrine of the ſigns, a more particular expoſition of the ſame, rather to be connected with ſemiotic pathology, ought not to detain us long.

Impeded Actions.

667. Of the ſymptoms which manifeſt themſelves in diſeaſes, none are of greater importance, or more urgent, either to the ſick perſon or the phyſician, than thoſe which diſorder the exerciſe of the functions. Hence all of them ſingly, as they flow from their cauſes, demand an accurate expoſition.

668. It is difficult, however, in ſuch multiplicity and ſtrict connection of things, to find an order, which may be exactly agreeable to the laws of proper method: Which inconvenience, troubleſome to phyſiologiſts, and ſtill more ſo to pathologiſts, as it cannot be altogether avoided, renders the diſſenſion among ſyſtematics not leſs excuſeable than inevitable. We ſhall, therefore, begin our arrangement from the vitiations of thoſe faculties which are diffuſed univerſally through

the body, or are common to many parts, that the leſions of particular actions, which thence enſue, may be the more clearly underſtood.

Troubleſome Senſations from Diſeaſe.

669. We ſay that the mind perceives, when, from any affection of the body, it conceives ideas. In what manner that happens is not the buſineſs of the phyſician to explain (65.). But the aptitude for exciting ſenſations is widely diffuſed over the whole body; and there is alſo given a great variety of things which are perceived. We are provided with ſenſory organs, every one of which have their particular ſtructure diſpoſed in their own places, by the intervention of which the ſenſible qualities of extraneous things, each in its own way, are repreſented: Beſides, there is in many parts a certain ſenſibility, which warns us of the neceſſities of nature; and, when occaſion requires, compells us to ſatisfy the ſame. Finally, there is a certain ſenſe given in common to the whole body, by no means to be confounded with the former, the principal attendant of diſeaſes, by which it happens that the mind is made uneaſy, is afflicted and agitated, when an injury is induced upon certain parts. This, therefore, although it poſſeſſes no peculiar organ, deſerves, however, to be conſidered in the firſt place preferably to the reſt, as well on account of the frequency of the ſymptoms to which it is liable, as becauſe it joins itſelf with other ſenſations.

Pain.

670. PAIN, as regarded by the phyſician, is an affecting ſenſation *ſui generis*, ſo perceived, that the mind always refers it to ſome part of the body, as ſuffering violence. It is uneaſy, therefore, becauſe the body is badly affected, and this being reſtored, it remembers the paſt without preſent pain. But, from ſomething immoderate which is in that ſenſation, it happens, that the mind is from thence not leſs afflicted than the body, and wiſhes not to be ſo vehemently affected.

671. Seeing, therefore, pain ſuppoſes a ſenſation too intenſe, it is evident that it depends upon the mutual intercourſe betwixt the mind and body, and that it has its ſeat no more limited than the faculty of perception, which is diffuſed univerſally through the ſyſtem, and its ſenſible parts; and that the conditions, which are required for perception generically in both principles of man, are likewiſe required for cauſing pain. It is therefore allowable for a beginner to look for theſe diſtinctions in this place, as far as they are methodically expounded by phyſiologiſts (27.).

672. But that which is corporeal, as far as can be conceived in any ſenſation, is intirely reduced to certain mutations of the ſenſible parts, regularly conveyed, in an uninterrupted courſe, by means of the continued nerves, to the *ſenſorium commune.* Whence it follows, that the affection, which cauſes pain, is placed in the too violent mutation of the ſenſible parts, which endangers the coheſion, tenor, and powers of the ſame; inflicts, or at leaſt threat-

ens to inflict, injury upon the continuous fibrillæ of the nerves, or the medullary ſubſtance itſelf, from whence theſe ariſe. It therefore behoves the mind to be really uneaſy, when any of theſe happen in that ſyſtem, whoſe integrity is ſo uſeful and neceſſary to human nature (532.). The dolorific powers, the conſequences and various degrees of pain, likewiſe confirm this very thing.

673. Wherefore pain is produced, when the ſenſible parts, by ſome external or internal force, are ſtretched in a greater degree than they can eaſily bear, or are injured by concutiating, bruiſing, compreſſing, ſqueezing, contorting, or vulnerating (218.), or, finally, are ſtimulated, eroded, or burnt by various acrimonies. It therefore ſupervenes innumerable diſeaſes, as a ſymptom, and is, above all others, the moſt urgent. Diſeaſes of the cavities enlarged (203.), diminiſhed (209.), fractures (217.), wounds (218.), luxations (226.), hernias (230.), prolapſes (248.), tumours (262. 664.), acrid cacochymies (289.), plethora (387.), various aberrations of the fluids (398.), depraved motions of the humours (406.), for the moſt part have pain attendant on them.

674. It happens, however, that a mutation of the *ſenſorium commune* alone, otherwiſe produced, cauſes pain no otherwiſe than if ſome part of the body ſuffered injury, no dolorific power (673.) being preſent without the ſenſorium: That a deception of this ſort may happen in other ſenſations likewiſe, dreams and delirium manifeſtly teach.

675. Pain, if it is vehement, cauſes inquietude of mind, reſtleſsneſs, anxiety, watchfulneſs, impotency, delirium, deſpair of life, irritation of the vi-

tal power in the part affected, tremulous vibrations, tenſions, ſpaſms (195.), an increaſed afflux of the humours, congeſtion, an impeded tranſit, cold, heat, inflammation, gangrene, inſenſibility, torpor (196.), reſolution. But, by mutual ſympathy, likewiſe pains, ſpaſms, convulſions, imbecility, paralyſis, an univerſal perturbation of the circulation of the humours, fever, languor of the vital motions, ſyncope, &c. are excited in other parts. This author of ſo many evils is likewiſe the guardian of life, which maturely apprizes us of the preſent miſchief and its conſequences, and compels us to ſeek a remedy in ſome way or other.

676. Whence the degree of pain, for the moſt part, correſponds to the greatneſs of the injury, which is always ſo much more vehement, as the intenſer action of the pain giving cauſe, threatens immediate deſtruction. It is likewiſe augmented by gracility (161. I.) of the part affected, a greater natural tenſion, irritability (190.), and a delicate ſenſe; to which if there is joined a dry temperature of the body, and impatience of mind, the pain becomes exquiſite. The higheſt degree of it, therefore, cannot be long ſupported, either by mind or body, but it either proves fatal, or is removed.

677. Beſides, as there is joined to every diſagreeable ſenſation, which is in all pains whatſoever, an idea of the manner in which the dolorific power in each acts upon the part,—thus are conſtituted the principal differences of pains, and, as it were, ſo many ſpecies, as diſtending, compreſſing, conſtringing, contuſing, cutting, pricking, bruiſing, rubbing, biting, burning, &c. We do indeed, on account of the ſimilitude of perceptions, compare

the injuries which we ſuffer in the body while in pain, with the leſions which the mechanical, phyſical, and chemical powers, applied externally, induce upon us. Nor is it improbable, that ſimilar ſenſations are excited by ſimilar changes of the ſenſible parts, and conſequently that the hidden can be explained from the manifeſt. But can it likewiſe be rightly inferred from hence, that the cauſe of every pain is always owing to that power which threatens the parts with diſſolution? or, at leaſt, that it ought to be placed rather in a violent affection of the ſolids, than in an impeded motion of the fluids through the nerves?

678. 'Ανωδυνια, or abſence of pain, therefore, where the ſick upon whom the dolorific power acts, are not affected with pain, is, not leſs than pain itſelf, to be reckoned among the ſymptoms of diſeaſes. For either the part affected is without ſenſe, the nerves being compreſſed, affected with ſtupor, or deſtroyed on account of tumors, luxation, fracture, contuſion, wound, ſphacelus, &c. or the *ſenſorium commune* being impeded, the whole power of perception ſinks in apoplexy, coma, epilepſy, convulſion, catalepſy; or the ſame being diſordered, the mind is diſtracted and labours under a delirium; or, finally, the vital power, and the vigour of circulation languiſhing, the ſenſibility of the parts collapſed becomes torpid in extreme debility, *deliquium animi*, and ſyncope. From the eaſy ſuffering of pain, however, we have no good reaſon to conclude, that either nature has denied feeling to the irritated parts, or has removed the diſeaſe.

679. Itching, a ſenſation the neareſt to pain, a pleaſure too intenſe from a corporeal change, hence

the forerunner of pain, ſuppoſes a troubleſome irritation, not indeed of an afflicting ſenſation, but irkſome; by which it happens, that we are, as it were, forced to ſcratch, rub, or, in ſome other way, agitate the part affected. As, therefore, the ſlighteſt mechanical motions, taction, tickling, friction, vellication, are wont to induce titillation upon the parts, which, becauſe they have not been accuſtomed to be touched, are of a delicate ſenſe: So moſt of the dolorific powers (673.), when they act more gently, or affect a part leſs tender, create itching. Different acrimonies, eſpecially, acting upon the ſkin by a gentle eroſion or mordacity, very often excite this ſenſation; whence it is a frequent moleſtation in the ſcab, *impetigo*, herpes, eryſipelas, different exanthemata, kibes, phthariaſis, and other cutaneous diſeaſes, as well as in various ſpecies of acrid cacochymies. There is likewiſe in this affection place given to ſympathy, by means of which the irritations, which act upon ſome parts, excite itching in others. This we learn from worms in the inteſtines, and calculi in the bladder.

680. But ſince there are likewiſe, in moſt of the neceſſities of nature, certain ſpecies of itching, which warn and ſolicit us to the competent motions; it is evident, that that ſenſation is not confined to the ſurface alone, but even belongs to the internal parts, and in theſe may be more vehemently excited from diſeaſe, ſo as to become urgent at an incongruous time, or in an improper degree. It will, therefore, be allowable to refer thither thoſe numerous ſtimuli, which, ariſing from a morbid cauſe, compel the ſick to coughing, ſneezing, yawning, ſtretching, and various excretions of the belly and urine.

681. In thoſe labouring under hyſterics and hypochondria, there exiſts an intolerable itching, without friction or animal motion, which particular internal membranes are ſometimes ſuſceptible of, although there is no evidence of ſtimulating acrimony. We may therefore attribute this to irritability (190.), by which the fibres of the part, forced into immoderate oſcillations, diſturb the faculty of perception. This, after having continued for ſome time, is ſpontaneouſly reſolved in the manner of ſpaſms, but ſometimes periodically returns at ſtated intervals.

Anxiety.

682. As we are in pain by a preſent evil, ſo the apprehenſion of an approaching one, which cannot be averted or overcome, renders us ſolicitous and anxious through fear, and proportionally more ſo, the more heavy it appears, the leſs evitable, or capable of being overcome. Anxiety, therefore, not leſs than pain, is an afflicting ſenſation, but by no means to be confounded therewith, far more terrible, and ſometimes more intolerable than death itſelf.

683. If the mind, therefore, is rendered anxious from the body being affected, it is altogether probable, that there is ſome corporeal cauſe preſent, which ſo changes the *ſenſorium commune*, that ideas are excited, which the mind cannot perceive and contemplate without horror, nor yet get rid of.

684. But this may have been the caſe, whether this change (683.) of the *ſenſorium commune* is owing and correſpondent to a ſtate of the body really dangerous, by the perception of which the mind is

with good reaſon afflicted, or to a condition of ſmaller moment, which only ſtrikes with ſudden terror (674.). The degree of anxiety may be the ſame in both, although the effects are very different. Thus much the laws of the mutual intercourſe between mind and body diſcover. Whence ariſes a truly diſtinct difference of anxieties.

685. When thoſe in delirium, through a confuſion of ideas, feign to themſelves the approach of many ſad and calamitous things, the mind is often thrown into extreme anguiſh, although the body is in no way afflicted, unleſs from the diſturbances of the *ſenſorium commune*. Hence they perceive impending evils, through an imaginary fear, rather from external cauſes than from diſeaſe. This ſpecies, frequent in phrenitis and melancholia, like to an imaginary pain (674.), is more troubleſome than dangerous (684.).

686. There ariſes from the body a more real anxiety, if, at any time, ſome obſtacle greatly reſiſts the efforts which nature uſes to expel ſomething which is uneaſy to her internally, as there is fear that they may not be ſufficient. They are therefore affected with anguiſh, in whom, when the matter to be excreted is ready, and urges the excretion by ſtool, urine, perſpiration, ſweat, ſputation, blood, &c. is, notwithſtanding, impeded. Hence anguiſh attends the efforts to hæmorrhagy, vomiting, birth, critical evacuations, metaſtaſis, exanthemata, calculi, and other heterogeneous and noxious bodies to be thrown out; likewiſe confined flatus, as well as excretions, ſuddenly ſuppreſſed, or eruptions repelled inwardly.

687. Moreover, impediments of reſpiration furniſh the moſt frequent cauſe of anxiety, which,

when they oppoſe the paſſage of the blood through the lungs, bring life into the utmoſt danger. A multiplicity of vitiations of the lungs, therefore, infarcted with different ſorts of matter, conſtricted with ſpaſm, beſet with tumours, tubercles, vomica, or ulcer, or compreſſed externally with air, water, blood, pus, tumour, or ſome other affection of the thorax; likewiſe of the aſpera arteria, and fauces, through which the air ought to paſs, as well as of the diaphragm and other muſcles, which aſſiſt in reſpiration; finally, innumerable contaminations of the air offending by heat, cold, levity, humidity, want of elaſticity, rottenneſs, corruption, (422. to 445.), contribute to this effect.

688. Thoſe things are of equal efficacy which vehemently diſturb the heart's action, and conſequently the vital circulation; whether there is joined a diſeaſe of the heart affected with ſpaſm, inflammation, eryſipelas, ulcer, polypus, aneuriſm, dropſy, ſome tumour, or concretion, beſet with heterogeneous matter, or obſtacles ariſing elſewhere, ſo impede it, that it cannot, by a moderate contraction, freely enough expel the blood from its cavities. Hence the threatening of a ſuffocated circulation urges nature to oppoſe it with redoubled efforts, not without great anxiety.

689. Wherefore ſpaſms, repletions, diſtenſions, obſtructions, compreſſions of the viſcera, which are contained in the abdomen; if, at any time, they increaſe the reſiſtance to the heart, by greatly impeding the motion of the humours through the veſſels, they the more certainly throw into anguiſh, the more they obſtruct the motion of the diaphragm and the lungs at the ſame time, and irritate the

heart in proximity. Thither, therefore, are referred hypochondriacal anxieties.

690. Finally, we are affected with anguiſh when, through the ſinking of the *vis vitæ* (170.), an extinction of the vital motions and circulation of the humours is threatened. This we are taught, from violent affection of the nerves, debility of the heart, approaching *deliquium animi*, ſphacelus invading the vitals, &c.

691. From which things (685. to 691.), duly conſidered, it is apparent, that it may join itſelf as a ſymptom attendant upon very many and very different diſeaſes; and, although it is not at all times equally dangerous, muſt not, however, be overlooked by a prudent phyſician. This, given as a monitor to the vital ſyſtem, even more than pain (675.) deſerves to be attended to; ſeeing it often either announces life to be in hazard, or renders death preferable.

Impeded Exerciſes of the Senſes.

692. NEXT to the impediments of common ſenſe, the ſymptoms which pertain to particular ſenſes are ſubjoined, and which are denominated external and internal. Theſe, more properly than the former, are referred to the impeded actions; ſeeing ſenſation is not performed as it ought, through a diſeaſe of the organs. But as the ſyſtem of ſenſe, according to the diverſity of ſenſible qualities, with which it ought to be impreſſed differently in different parts, is provided with an apparatus very diſſimilar, ſo there happens in it various alienations from the ſound ſtate, not every-where the ſame. We muſt therefore treat particular ones ſeparately.

This, however, is common to all, that, like other functions, their health conſiſts in a certain moderate courſe and congruous tenor, from which, when they deviate either on the one ſide or other, they are properly ſaid to be vitiated. We may therefore conveniently reduce the leſions in general to defect, exceſs, and depravation.

Symptoms of the Touch or Feeling.

693. FEELING, *in ſuo genere*, diffuſed very widely in compariſon of the other ſenſes, is either exceedingly diminiſhed in ſtupor, or altogether aboliſhed, and that either in a particular part, or in ſeveral at the ſame time, or over the whole body. Each vitiation is almoſt always owing to the ſame cauſe, but different in degree: The epidermis covering the organ of feeling, hardened by callus, elophantiaſis, lepra, incraſſated by a corticoſe, ſcurfy, corneous degeneracy, or raiſed at a diſtance from the ſubjacent ſkin by bruiſes, bliſters, puſtules, there being interpoſed blood, ſerum, pus, &c. may be in fault. At other times, the ſkin labouring under the various corruptions of too great rigidity, laxity, collapſe of its ſmaller veſſels, contraction, aqueous, or mucous infarction, or become ſtupid by conſtriction, contuſion, cold, heat, gangrene, by affecting the organ at the ſame time, blunts or obliterates the ſenſe. Finally, the nerves in their origin, progreſs, or extremities, rendered unfit for action by preſſure, wound, contuſion, eroſion, exſiccation, emollition, extenuation, defect of the vital power, want of a proper fluid, depoſition of a morbific matter, uſe of narcotics, or other injuries, chiefly produce this effect. Thither ought likewiſe to be

referred the univerſal inſenſibility which attends diſeaſes of the *ſenſorium commune*, apoplexy, lethargy, epilepſy, catalepſis, &c. But there alſo accedes a vitiation of the motive faculty, which, however, being corrected, the impediment of ſenſe ſometimes remains, or the latter being taken away the former continues.

694. The feeling is ſometimes immoderately increaſed, with great inconvenience, ſeeing an ordinary taction is turned into pain, ſo that the parts likewiſe ſhrink from it: That happens, when the organ wants its tegument, is either too ſlightly covered, or itſelf more tender or mobile than is proper, or immoderately tenſe. Hence it happens to thoſe affected with intertrigo, wound, ulcer, inflammation, eryſipelas, abſceſs, contuſion, various hyſteric and gouty pains, ſpaſm, &c. In ſpaſmodic diſeaſes ſometimes the whole ſurface of the body almoſt becomes ſo tender, that even the intention of touching ſtrikes with fear.

695. The diminution (693.), as well as the too great acuteneſs (694.) of the touch, is to be conſidered as a ſpecies of depraved feeling; for, in either caſe, a ſmaller or greater affection of the organ very eaſily confounds the perception of qualities. Another ſpecies of miſtake is, when ſenſation is referred to an incongruous part (674.).

Symptoms of Taſte.

696. TASTE, the next in affinity to feeling, is ſubject to ſimilar vitiations from ſimilar cauſes. This, however, is peculiar to the tongue, the principal inſtrument of this ſenſe, that it very ſuddenly contracts, in diſeaſes, although not its own, cruſts, mucus,

cus, and ſordes, and is covered with apthæ, &c. The ſaliva likewiſe, which contributes very much to taſting, is liable to very many vitiations, as well of quantity as quality. To this add that appetency, which admirably heightens the gratefulneſs of ſapors, is ſeldom keen in the ſick, but on the contrary loathing and nauſea are often produced. Hence the various origins of a multiplicity of leſions of this ſenſe are underſtood.

697. The moſt remarkable is alienation of taſte; ſeeing the ſick complain of the ſenſe of a ſalt, bitter, urinous, acid, æruginous, ſweet, rancid, cadaverous ſapor, with which every thing they taſte ſeems to them to be ſeaſoned. The cauſe for the moſt part reſides in the ſaliva infected with a vitiated matter, whether it has received this from the lymph of the blood, or contracted it, upon being poured into the mouth, from ſome tabefaction of the neighbouring parts: Whence acid, bilious, putrid, rancid, ſaltiſh cacochymies, or other acrimonies, as well as ſordes, cruſts, ulcers of the mouth, tongue, teeth, palate, gums, noſtrils, fauces, œſophagus, aſpera arteria, lungs, &c. produce this ſymptom. Various ſtates of tenſion or laxity of the organ of taſte and papillæ, or an affection remaining from a former ſapor, and even perturbations of the *ſenſorium commune* may contribute to this effect. It is therefore evident, why an uncommon ſapor proceeds ofteneſt indeed from diſeaſe; ſometimes, however, with a good omen from a thorough correction of the morbific matter.

Symptoms of Smelling.

698. Smelling, ſometimes from a morbid cauſe, is rendered too acute; in ſo much that ſubſtances having ſcarce any odour are perceived, but ſuch as are odorous at a greater diſtance, and by far too ſtrong: Hence, they ſometimes produce ſneezings, convulſions, and *deliquium animi*, nudity, dryneſs, too great tenſion, and exceſſive mobility of the olfactory papillæ, or a delicate tenerity either of the nervous fibrillæ proper to this ſenſe, or of the whole ſenſory ſyſtem, are fit to produce that in acute or chronic diſtempers. Hence, it eſpecially occurs in the hyſteric, hypochondriac, phrenitic, and ſuch as are affected with hydrophobia from the bite of a mad dog.

699. There is more frequently an obtuſion of ſmelling than abolition, which is called ανοσμος (*i. e.* without ſmell). Obſtruction of the membrane of the noſe in the mur, too great humidity in the coryza, redundance of mucus, craſſitude, heterogeneous ſubſtances admitted, ſtone, gypſum, worms, &c. certain tumours, polypus, ſchirrhus, cancer, exoſtoſis, wound, contuſion, ſpreading ulcers, caries, callus, and concretion of the ſides of the noſe, vitiations of conformation, &c. in various ways induce theſe leſions. Moreover, whatever things hinder the paſſage of the air through the noſtrils, various impediments; as alſo, compreſſion, induration, reſolution, emollition, and obliteration of the olfactory nerves, where they terminate in papillæ, or deeper; hither likewiſe may be referred the impotency of perception, which is contracted from a perpetual exhalation of cancerous ſanies. Finally, the diſor-

ders of the *ſenſorium commune*, which likewiſe hebetate the other ſenſes; apoplexy, epilepſy, catalepſis, ſoporific diſeaſes, &c. tend to this effect.

700. Depravation ſuppoſes either an eſtranged odour of thoſe things which are ſcented, or the perception of odour in an unſcented atmoſphere. It is produced, therefore, when the organ of ſmell, from a ſtinking matter which is inherent in the body, is ſo affected that the odour ſeems to riſe externally. Mucus, ſaliva, pus, ichor, gore, ſordes, corrupted, putrid, and rancid, lodged in the hollows of the noſe, mouth, teeth, gums, tongue, fauces, œſophagus, trachea, lungs, or fœtid vapours aſcending from the ſtomach, are fit to induce that deception: Likewiſe, the long remaining among ſtrong ſmelling ſubſtances makes a permanent impreſſion, which is ſlowly blotted out. Analogy likewiſe teaches us, that this vitiation is ſometimes owing to diſturbances of the *ſenſorium commune* (674.); but it then ſeldom falls upon the olfactory organ alone.

Symptoms of Hearing.

701. THE hearing can be vitiated in four ways, viz. by augmentation, abolition, hebetation, and depravation. Whence οξυηκοια, *i. e.* acuteneſs of hearing; κωφωσις, deafneſs; βαρυηκοια, difficult hearing; tinnitus, bombus, echo, whizzing, ſibilation; which ſymptoms are to be reckoned of ſo much greater moment, as they both infeſt a ſenſe of a more noble function, and have their ſeats and cauſes more abſtruſe, and leſs eaſily preſent themſelves for cure.

702. Great acuteneſs of hearing is called Ὀξυηκοιά, which cannot even bear the ſlighteſt ſounds without anxiety, pain, convulſions, delirium, or *deliquium animi*. It is owing to too great tenſion, ſiccity, or mobility of the organ of hearing, brain, nerves, or membranes. It therefore ſupervenes upon very acute diſeaſes of theſe parts, inflammatory, ſpaſmodic, dolorous, ſuch as olalgia, phrenitis, cephalalgia, &c. It likewiſe attends delirium, unaccompanied with fever, mania, melancholia: But it is an evil to which the hyſteric, hypochondriac, puerperal, thoſe extenuated by a ſevere diſeaſe, prone to vigilance, and ſuch as are of a more irritable conſtitution (190.), are in the higheſt degree ſubject.

703. There are a far greater number and diverſity of the cauſes which obſtruct hearing; nor is their ſeat leſs manifold. The parts indeed are very many, and the conditions of every ſingle one ſtill more, which, as they contribute to the integrity of this ſenſe, cannot be vitiated without their function being impeded. Phyſiology, therefore, ought here to throw the chief light upon the Pathology, and point out the order in which they ſhould be treated.

704. Theſe are almoſt the vitiations of an organ the moſt compound, which deſerve to be referred thither. Defect of auricle, ſtraitneſs of the *meatus auditorius*, repletion, duration, concretion from foreign matter, relaxation of the *membrana tympani*, rigidity from callus, oſſification, obſtruction from ſordes, incraſſation from luxuriant fleſh, rupture, eroſion, or ſome other defect; luxation, anchyloſis, caries, diſſolution, or abſence of the ſmall bones of hearing, repletion of the cavity of the tympanum with a ſerous humour, phlegm, extravaſat-

ed blood, pus, ichor, and inquination with ſordes, infarction of the veſtibulum, cochlea, labyrinth, or a perverted conformation; laxity, dryneſs, induration, degeneracy, abolition of the membranes, which are thereupon expanded; tumour of the veſſels from congeſted humours, obſtruction, paralyſis, ſpaſm of the internal muſcles; conſtriction of the euſtachian tube, στενοχωρια, *i. e.* anguſtation, obſtruction, concretion, eroſion. Any one of theſe, or a complication of ſeveral, as they prevent the ſonorous tremours from being received, collected, reflected, tranſmitted, impreſſed, or raiſing the correſponding vibrations, may in different ways and degrees hebetate, or altogether deſtroy the hearing.

705. Even when the organ is entire, the nervous apparatus with which this ſenſe is provided, continued from that organ as far as the *ſenſorium commune*, in its whole courſe being compreſſed, deſtroyed, become marcid, rigid, or inſenſible; or the brain itſelf by an univerſal decay, apoplexy, epilepſy, &c. oppreſſed, relaxed, exhauſted, or in ſome way or other rendered inhabile, ſometimes are in fault.

706. But it is evident from the uſe of the parts, that ſome of theſe vitiations (704, 705.) may induce a difficulty of hearing; that others bring on either this or deafneſs itſelf, as they have been various in intenſity, complication, and duration; others, ſooner or later, with certainty, however, bring on deafneſs. To this moreover, unleſs timeouſly removed either by nature or art, ignorance of ſpeech, or oblivion, through diſſuetude always accedes.

707. Thoſe hear depravedly whoſe ears; while nothing ſounds, are affected with tinnitus, or ſuſſuration,

ration, make a noiſe, or, like an echo, emit ſounds. A tranſitory ſymptom of which, ariſing from ſlight cauſes, happens very often even to the ſound. Continuing longer, whether it has been ſolitary, or joined with other diſeaſes, is of greater moment, and is of various prognoſtic. But it ariſes when tremors reſembling ſounds in the *meatus auditorius*, *membrana tympani*, its cavity, ſides, internal air, ſmall bones, membranes, and other parts of the interior organ, are excited by the ſmall veſſels diſtributed there, on account of plenitude, external preſſure, obſtruction, or inflammation, making inordinate ſtrong pulſations. Whence it often attends plethora, febrile diſeaſes, acute, or inflammatory, which chiefly infeſt the head, catarrhs, ſuppreſſed evacuations, ſtagnation of the humours in theſe, or the neighbouring parts, a diſorderly impetus of the ſame; hence approaching delirium, hæmorrhagy from the noſe, parotides, &c. Likewiſe ſpaſms and convulſive tremors of the muſcles and motive fibres in theſe places, in the hyſteric, hypochondriac, epileptic, &c. cauſe the ſame thing. Wherefore, either immoderate relaxation, or tenſion of the parts of this organ, by which they are too eaſily agitated, or, moved longer than is proper, continue to vibrate, likewiſe contribute; alſo various vitiations (677.) of the euſtachian tube, which pervert the due action of the air within the tympanum. Finally, various affections of the nervous part, which pertains to hearing, continued from the organ to their origin, as well as of the encephalos, injured by preſſure, irritation, commotion, either primarily, or on account of the mutual conſent with other parts: ſo that this cauſe is frequently ſubjoined; wherefore that ſymptom accompanies inflammatory, ſoporific, catarrhal, ſpaſmodic diſeaſes of the head, likewiſe diſorders of the ſtomach, &c.

708. But there is ſcarce any other function given, concerning the nature of whoſe vitiation, cauſes, and parts affected, it is ſo difficult to know, and to determine the certain cures. And it is no wonder, when we underſtand ſo little of the ſound ſtate of an organ the moſt ſecret, and of the uſe of its particular parts.

Symptoms of Viſion.

709. ALTHOUGH the eye, the moſt neatly conſtructed organ of all the other ſenſories, is ſubject to many other vitiations; the ſymptoms, however, which pertain to its function, in like manner, may be reduced to four genera, viz. increaſe, diminution, abolition, and depravation of the ſight. Thoſe that are under any other denomination do not belong to this place. Hence we ſhall likewiſe follow this order in the expoſition of the ſame.

710. They labour under too great acuteneſs of ſight, whoſe eyes have ſo much ſenſibility as to fly the light, or to bear it with uneaſineſs, even when moderate; for which reaſon they ſee indeed in a fainter light, but in one more ſtrong are conſtricted and affected with blindneſs. We may call theſe φωτοφοβιαι, *i. e.* afraid of light. They are called by ſome ημεραλωπαι, who are able to ſee better in the night than in the day-time. The latter, ſome rather think, ſhould be called νυκταλαπαι.

711. The cauſes of this vitiation are underſtood from thoſe things which we have already advanced concerning ſimilar leſions (694. 698.) of hearing

and the other ſenſes, only applied to the organ of viſion. Hence it frequently occurs in like affections (702.) of the eyes, head, and nerves, as well acute as chronic, eſpecially the conſtant attendant of ophthalmia. Diſſuetude of light induces this tenderneſs, even upon ſound eyes. Weakneſs, however, or impediment of that power, by which we contract the pupil in a ſtronger light, chiefly diſpoſes to it; ſo that this, therefore, is conſtantly dilated, labouring under μυδρίασις, or at leaſt not enough ready for contraction. For, ſince the eye accommodates itſelf to the quantity of light applied by the modification of the pupil, a wider entrance behoves to create an intolerance of a clearer light. Whence it is evident, how, upon great loſs of ſtrength, the too great ſenſibility acceding ſo much heightens that ſymptom. What a ſmaller degree of cataract, leſs at the margins, but of greater ſpiſſitude at the middle, produces, rather ſuppoſes a diminiſhed acuteneſs of a kind of twilight-viſion, than one more intenſe; conſequently does not belong to this place.

712. As the cauſes of blindneſs are very many in number, and in their nature and ſeat very different, they merit a diſtinct expoſition. Some of theſe indeed are external to the globe of the eye, ſome in this itſelf, and others again behind the ſame, from thence as far as the encephalos.

713. The firſt neither affect the faculty of ſight, nor the organ, but only the conditions, without which viſion cannot be exerciſed. They are therefore only external impediments which render the eye inacceſſible to the light; therefore do not produce any other than a ſpurious blindneſs. Thither may be referred diſeaſes of the palpebræ. A

tumour from a conflux of humours, inflammation, eryſipelas, œdema, emphyſema, tubercles, overgrowth of the teguments, luxuriant fleſh, encyſted tumours, &c. preventing their opening, coherence from the interpoſition of pituite, rheum, ulcerous, porriginous, or venereal matter, a congenite concretion, or one produced from inflammation, burning, excoriation, wound, or ulcer, which is called αγκυλοβλεφαρος (223.); conſtriction, from the orbicular muſcles being affected with ſpaſm; laſtly, πτωσις, *i. e.* abolition, on account of reſolution of the ſuperior palpebræ, or a tranſverſe ſection of its levator muſcle. The *caruncula lachrymalis* likewiſe, and, which is near to this, the ring of the adnata rather lax, ſeeing they ſwell with congeſted humours, inflammation, abſceſs, or a degenerate increaſe of their own matter terminate in a confuſed pannicle, pterygium, &c. and thus expand themſelves above the cornea, ſo as to intercept the light. Sometimes tumours of the neighbouring parts which hang over the eye may create the like obſtacle.

714. The diſeaſes of the globe of the eye, which induce blindneſs, by reaſon of the number and diverſity of the parts of which it is compoſed, are exceedingly numerous. The cornea becomes impervious to the light, and obſcured by ſpecks from inflammation, burns, puſtules, abſceſs, ſarcoſis, cicatrix, coagulation of humours, &c. of various name, colour, ſpiſſitude, ſeat, and extenſion; defect of the aqueous humour, or a mixture of blood, pus, or ſordes with the ſame, or its paucity, by turning into a mucous or membranaceous coagulum, which forms the ſpurious cataracts of the moderns; obſtipation, κυνιζησις, *i. e.* reſolution, ſymphyſis, and conſtriction of the pupil on account of

various vitiations of the uvea, turgid with congeſted humours, luxuriant, flaccid, convulſed, or prolapſed (255.); various ſuffuſions, either in the body or capſule, of the chryſtalline lens turned opaque, arified, ſuppurated, or diſſolved; tumours of the ſame, together with a grey coloured obſcuration, depriving the neighbouring parts of ſenſe and motion by preſſure; ſimilar vitiations of the vitreous humour, joined with an affection of the lens, either preceding or ſupervening, the retina at laſt compreſſed, turned callous, infarcted, become marcid, reſolved, or, finally, inſenſible by ſome affection either peculiar or from other parts. That any one of theſe ſingly, or ſeveral complicated with one another, may produce various ſpecies of blindneſs, cataracts, glaucomata, amouroſis, in different ways, and having different appearances, is abundantly plain to any one who has rightly underſtood the phyſiology of this ſenſation.

715. To the third genus belong (712.) whatever things in a ſimilar way, and afterwards remarked concerning the retina (714.), affect the optic nerve, and bring impotency upon it; ſuch as various leſions of the brain, either general, apoplectic, epileptic, cataleptic, &c. or more particular, which principally hurt the faculty of ſight, by intercepting the free intercourſe of the *ſenſorium commune* with the external ſenſories, although the organ does not labour under any manifeſt vitiation. Blindneſs is, however, induced, although the organ is infeſted by no manifeſt vitiation, when, from a wound, fracture, contuſion, obſtruction, congeſtion, effuſion, or corruption of humours, various abſceſſes, defect of the vital fluid, languor of the natural ſtrength, and ſpaſm, there happen to theſe parts

compreſſion, deſtruction, inundation, exeſion, extenuation, collapſe, marcour, and conſtriction. By this affection is meant amouroſis, when ariſing from a fixed cauſe it is permanent; σκοτωμα, *i. e.* vertigo, which, after having remained troubleſome for ſome time, ſuddenly goes away of its own accord.

716. Hebetude of ſight, αμβλυωπια, as it only differs in degree from blindneſs, and in this very frequently, ſooner or later, terminates, ſo it is produced from the like cauſes, but ſlighter; and even this itſelf admits of various degrees, becauſe the ſame acuteneſs does not obtain among individuals found in that ſenſe. It is, therefore, underſtood from the things delivered above (712. to 716.).

717. Depravation of ſight is, when images of things are ſeen as if preſented before the eyes, which, however, are not either different from what they really are, or rightly indeed, but not at the due diſtance, or with a perverted direction of the eyes. This manifold vitiation, therefore, ariſing from very different cauſes, a ſymptom of many diſeaſes, either ſuppoſes viſion itſelf alienated, or the manner of viewing objects.

718. But, if internal cauſes affect the retina with impulſes, ſimilar to that which light reflected from external objects is wont to do, according to the ſtated laws of ſenſation, ſimilar ideas muſt neceſſarily be produced: Whence the firſt deception of ſight, called imagination, which exhibits hairs, ſparks, μαρμαρυγαι, *i. e.* corruſcations, and various repreſentations, even while the palpebræ are ſhut. The veſſels of the retina, or the neighbouring parts, turgid with humours, having immoderate pulſations, as they agitate its medullary ſubſtance in proximity, for the moſt part produce this ſymptom; it is fre-

quent, therefore, in contuſion and inflammation of the eyes, as well as in plethora, and in acute, febrile, inflammatory, catarrhal, ſpaſmodic diſeaſes, which affect the head too much with an afflux of humours; this is often the forerunner of deſipiency or hæmorrhagy. It likewiſe attends φωτοφοβια (710.), *i. e.* intolerance of light, if the eye becoming more tender is ſtruck with too much light. Sometimes, ariſing from the vitiations above enumerated (707.), it has its ſeat in the optic nerve, or brain itſelf.

719. Certain points of the retina inſenſible by obſtruction, ecchymoſis, callus, compreſſion, relaxation, opaque corpuſcles floating in the aqueous, vitreous, or chryſtalline humour; the cornea beſet with ſpecks dim the image of the object with puncta, ſtriæ, films, clouds, and chequer it with bars, and theſe, with the eye fixed, either ſtable or fluctuating, according to the various ſeats of the diſorder. This is the next ſpecies of deception. Air globules, or oleaginous guttulæ or ſtriæ, pellucid, floating in the aqueous humour, by the unequal refraction of the rays, may likewiſe repreſent the image variegated with heterogeneous ſpots, and moveable bodies, although not opaque. The eyes alſo, when watery, or the *tarſi palpebrarum* ſwelled, the light being admitted into the pupil reflex, in like manner render viſion confuſed, by affixing an incongruous radiation to the image of objects.

720. Sometimes things are ſeen not in their proper colour, when a heterogeneous colour affects the cornea or the humours of the eye, tranſparency being intire. And ſometimes a vehement affection of the nervous ſyſtem produces this vitiation.

721. Vertigo, δινος, likewiſe belongs to this place, by which objects, although ſtable, ſeem to ſhake,

vibrate, and to be overturned; ſo that the perſon likewiſe, unable to ſtand, ſtaggers upon his limbs or falls down. If viſion is darkened it is called σκοτοδινος, *i. e.* vertigo caliginoſa. The cauſes are whatever, by compreſſion, ſuccuſſion, agitation, or a debilitating power, diſturb the regular motions of the fibrillae of the brain, optic nerve or retina; whether they act upon theſe immediately, or by conſent. Of this ſort there are reckoned a great number, ſuch as blows upon the head or eyes, contuſions, fractures, internal tumours, inflammatory, eryſipelatous, febrile, ſpaſmodic, catarrhal, ſoporific, or painful diſeaſes affecting the ſame parts; likewiſe thoſe attended with ſuppuration, plethora, various cacochymies, rarefaction, impetus, or congeſtion of humours at the encephalos; its inundation from theſe extravaſated, or ſtagnating; retention of ſuch things as ſhould be excreted; metaſtaſis of morbific matter of various kinds; exceſſive evacuations, diſſipation of the ſtrength by hunger, vigilance, cares, more intenſe ſtudies, and violent diſeaſes, affections of the ſtomach, inteſtines, hypochondriac veſſels and viſcera, and uterus; irritations propagated from other parts upwards, &c. Whence it is wont to precede, attend, or ſupervene very many diſeaſes. But ſeeing the beholding of things which are turned around, or otherwiſe quickly agitated before the eyes, the moving of the head or whole body in gyration, and the frightful proſpect of a precipice, induce vertigo upon ſuch as are accuſtomed to it, it is not improbable that internal cauſes act much in the ſame manner.

722. That vitiation which multiplies, divides, mutilates, or otherwiſe perverts the images of objects, is owing to the many diſorders of different

parts of the eye, which alter their ſituation, motion, and ſubſtance; ſpaſmodic and paralytic diſorders eſpecially, affecting the muſcles of the eyes, retina, optic nerve, and brain, frequently produce very extraordinary deceptions of this ſort.

723. The faculty by which we accommodate the eye to different diſtances of objects, is vitiated in many ways in (μυωπια), myopy, (πρεσβυωπια), preſbutes, (υπερπρεσβυτια) hyperpreſbutes.

724. The eye affected with myopy, unable to contemplate more remote objects, requires alſo a too near approach, that it may ſee diſtinctly. It therefore labours under an exceſs of that power by which we collect the rays of light by refraction; for ſo it happens, that the rays coming from a diſtance, almoſt parallel, are too ſoon aſſembled into a focus, and thence fall in a ſcattered manner upon the retina. The cauſes are, a greater length of the eye, a more convex cornea, a greater gibboſity of the chryſtalline lens, it being too remote from the retina, a greater denſity of the mediums through which the rays paſs. Spurious myopy, which is induced by a greater ſtraitneſs of the pupil, a leſs pellucidity of the cornea and humours, or a ſmaller degree of ſenſibility of the iris and retina, are rather to be referred to hebetated viſion (716.).

725. Πρεσβυωτια, preſbutes, a vitiation oppoſite to the former (724.), common to old people, is likewiſe owing to the oppoſite conditions; a want of the lens may alſo be referred hither.

726. 'Υπερπρεσβυπια, hyperpreſbutes, which ſuppoſes the lens ſo near to the retina, that the rays coming from any diſtance whatever throw their focus behind the retina; hence, neither the nearer or more remote are ſeen diſtinctly, if anywhere to be given

be called a great degree of ſenile viſion (725.), and ought to be reckoned among the ſpecies of diminiſhed viſion (716.).

727. Spaſmodic and paralytic affections of the nerves ſometimes ſo confine the viſion, that even the ſmalleſt increaſe of diſtance cannot be allowed, but the object totally diſappears:—A kind of vitiation very rare and ſingular.

728. Concretion of the eye with the neighbouring parts, preſſure by tumours, an alienated ſituation, ſpaſm, paralyſis, and diſtraction of its muſcles, or other impediments, may differently pervert the motion and direction in ſeeing. Whence δινοπτια, lateral viſion, the ſupercilious and dejected look, ferocious aſpect, ſourneſs, and the like defects.

729. Amongſt theſe, the moſt remarkable is, ſtrabiſmus, or ſquinting, by which thoſe affected ſee with diſtorted eyes, and unequally moved. Various diſtortions inwards, outwards, upwards, and downwards, of one or both eyes, conſtitute the difference. The manifold ſeats and cauſes of this vitiation are aſcribed to the power of viſion in both eyes being unequal, in one much weaker, or even deficient; to the muſcles being injured by ſpaſm, paralyſis, wound, ulcer, contuſion, preſſure, contraction, adheſion, ſo that they cannot direct both eyes equally; to the cuſtom of looking obliquely, or with one eye only; a bad conformation of the cornea, or its opacity in ſome part; an oblique ſituation of the chryſtalline lens; to an unequal action of the ciliary proceſſes; laſtly, to a diſcordant harmony of the two retinas.

Leſions of the internal Senſes.

730. THE external ſenſes do indeed adminiſter the matter upon which the ſentient power exerciſes itſelf; but what is moſt excellent in that function is owing to the internal ſenſes, as they are called. But although the mind may ſeem to claim to herſelf the principal part of theſe, it muſt not however be denied, that the organs of the body likewiſe contribute their ſhare, and, therefore, to the diverſity of theſe muſt be in part aſcribed the different exerciſe of the ſenſes of the laſt ſort, which are obſerved in perſons in health. Whence it is natural to infer, that alienations are given as well here as in the external ſenſes, which, as they flow from the vitiations of the body, may be very well ſubjected to a medical enquiry (36.).

731. Although theſe things are ſufficiently certain, we are ſtill, however, ignorant of the laboratory in which theſe mental operations are performed; nor is it allowed us to eſtabliſh any probable conjecture concerning the number, ſituation, or conformation of the organs with which it is provided; or of the powers, manner of acting, particular endowment of every ſingle one, and the like: By which it happens, that in ſo great ignorance of the ſound ſtate, we can determine nothing certain concerning the nature and ſeat of the vitiations which here occur. We muſt therefore, for a while, acquieſce in the general doctrine, until phyſiology has diſpelled the clouds.

Delirium.

Delirium.

732. THAT perſon is ſaid to be delirious, who, when he is awake, like however to one dreaming, refers ideas that ariſe from internal cauſes to external things, and conſequently perceives and thinks things preſent which are not; alſo he who combines and ſeparates ideas every-where ariſing incongruouſly, bearing a judgment inconſiſtent with common ſenſe; likewiſe he who, contrary to reaſon, aſſumes manners foreign to his own, and is hurried away by inordinate and unruly perturbations of mind.

733. *Delirium*, therefore, ſuppoſes a diſordered ſtate of the thinking faculty in a perſon awake, by a diſeaſe of the organs. For, although the exerciſe of the other ſenſations may be perverted, yet, unleſs an erroneous judgment has likewiſe acceded, it can ſcarcely be accounted delirium.

734. Whence are obſerved manifold differences, and various degrees of this ſymptom, as it is either univerſal or particular, fixed or wandering, conſtant or interrupted, mild or furious, incipient or complete.

735. But it is very difficult, on account of the extreme obſcurity of this matter (731.), either to mark the parts affected, or the different modes of leſion by which particular ſpecies of delirium ariſe. From a compariſon of thoſe which happen in the ſound ſtate, it ſeems, that it could at leaſt be affirmed, that, in ſome way or other, thoſe regular and equable motions of the ſenſory organs, ſubject to the government of the mind, are diſordered, upon which depend the regular conception of ideas,

conſiſtent ſeparation, combination, ſucceſſion, and attentive contemplation, without which the judgment cannot be ſound.

736. Whether, therefore, the ideas, which internal cauſes excite, are ſo vivid, as to ſeem to have proceeded from without, and ſeize upon, and hurry away the mind without ſuffering it to attend to others; or whether incongruous ideas join themſelves to others that are genuine; or finally, if ſome of thoſe having affinity to others, or ſuch as are intermediate, being ſuppreſſed, cannot be extended: Whichſoever of theſe has been the caſe, it is manifeſt, that it cannot happen, without firſt the judgment, afterwards the will, ſhall be drawn into error, and moreover motions correſponding to theſe as well of the body as mind, are produced, one deception introducing another.

737. The vaſt number of powers, which obſervation has taught can produce diſturbances of that ſort, is reduced almoſt to the following:

I. Thoſe which, by weakening the tenor of the medullary ſubſtance of the brain and origin of the nerves, enfeeble the ſentient power. Of this ſort are immoderate evacuations, ſevere diſeaſes long endured, hyſteric, hypochondriac, apoplectic, cataleptic, and epileptic diſtempers; immoderate exercitations of the rational faculty (522), violent and long continued agitations of the mind (532), watching (550. to 552.); likewiſe thoſe things which, by mucous (283.), or watery (287.) ſtagnations, deluge the tender ſtamina of the encephalos, and render them flaccid and inert (160. I. II.).

II. Thoſe which, by a more intenſe circulation of the humours (409.), directed upwards (411.), accumulate the blood in the veſſels of the encephalos; hence, by diſtenſion, pulſation, attrition, heat, aberration, immoderately agitate the medullary ſubſtance in proximity.

III. Thoſe which, by dryneſs, rigidity, gradual infarction cauſing induration, render the ſenſory fibres leſs mobile and mutable; ſtates, of which when they are once ſuſceptible, that prove indeed too tenacious: To which greatly contributes an atrabilarian texture of the humours, induced by diſeaſe, or ſome depravity of the non-naturals (284. 320. 355.).

IV. Thoſe which, by irritating, excite irregular, inordinate, and impetuous motions in the *ſenſorium commune*, whether acting immediately upon this itſelf, or propagated thither by conſent from other parts. But the manner of the ſtimuli, which diſturb the ſentient power, and of the irritations of the vital principle, is the ſame, nor are their number and diverſity fewer. Whence they are underſtood from the things delivered (171. *et ſeq.*)

V. Finally, manifold impediments, which, by inducing violence upon the parts of the encephalos, perverting the ſituation, connection, and texture of the ſame, obſtructing, compreſſing, agitating, and lacerating the canals, diſturbing the circulation of the humours, reſiſt the conſentaneous motion of the ſtamina of the medullary ſubſtance. A depraved conformation contracted after birth, commotion, contuſion, fracture, wound, abſceſs, ecchymoſis, hydrocephalus, and the like, which infeſt the head, are referred to this.

738. But place is likewiſe given here to prediſponent ſeeds, which render ſome more inclinable than others, as well to delirium as to particular ſpecies of it: Temperaments which, without doubt, (614.),

(614.), eſpecially the melancholic or choleric, and irritability (616.), greatly conduce; beſides that peculiar family diſpoſition propagated by inheritance, ſcarce to be wholly explained from the former.

739. The irregularities of the imagination, which are corrected by the judgment, are only ſlighter degrees of folly, and have ſimilar cauſes. Likewiſe, the obſtinacy and ſtiffneſs, which, by the force of diſeaſe, is ſometimes produced in the will, no leſs than turbulent commotions of the mind (732.), belong to this head.

740. A wavering, confuſed, obliterated memory, puerility, fatuity, αναισθησια, *i. e.* want of the ſenſes, απαθεια, by which, on account of a diſeaſe of the organs, all the affections of the mind whatſoever are extinguiſhed, and whatever other miſchiefs are of that ſort, each of them ſuppoſes ſome leſion of the ſenſory organ in its own way; the property of the leſion, however, ſcarce to be determined further than the occaſional cauſes of indiſpoſition, and diſeaſes preceding, attendant, and ſubſequent, can be pointed out. Age, temperament, torpor of the vital power (196.), organic vitiations (735. V.), laxity and rigidity of the ſolids; obſtruction, collapſe, and concretion of the ſmaller veſſels; ſpiſſitude of the humours, an aqueous inertneſs, paucity, redundance, or a diminiſhed motion of the ſame; paralytic, and ſpaſmodic affections of the nerves, and the diſeaſes thence ariſing, either univerſal or particular, deſerve to be principally attended to.

Symptoms of the Motive Power.

741. THERE are none of the corporeal functions which cannot be aſcribed to motion. Whence, on

account of the number and diverſity of theſe, there is an innumerable variety of motions, which are performed in health. The animal machine has, therefore, its own motory ſyſtem alſo diffuſed through all the parts, provided with its own fibres, as well ſingle as collected into muſcles, which, like inſtruments of motion, are animated with a motive power. Thus are excited motions of two kinds; the one ſpontaneous, the other, that which is governed by volition. But theſe, although they are governed by different laws, and may, therefore, ſeem to differ much among themſelves, it is probable, however, acknowledge the ſame principle of motion, and are not affected by a diſſimilar organic apparatus. One thing is certain, that they are liable to the ſame diſeaſes. We ſhall, therefore, treat of the ſymptoms of both under one common head.

Spaſm.

742. SPASMS are of much greater frequency, even than pains in the ſick; nor is it ſeldom they conſtitute the whole diſeaſe, at leaſt the principal part of it; and themſelves, as they flow from their own cauſes, become, in their turn, the cauſes of very many ſymptoms. Although, therefore, the influence of ſpaſm is by ſome extended much too far, it is to be confeſſed, however, that there is ſcarce another affection of the living body given, the occaſional cauſes of which happen either more ſuddenly, ſo univerſal with regard to its ſeat, or having greater power to diſturb the functions in every way.

743. A violent, involuntary, and inordinate action of the motive fibres is called ſpaſm. All and ſingular the parts of the motory ſyſtem, which are widely extended (741.), are ſubject to it. But the motive power, which animates the fibres and muſcles in health, and that which exhibits action in ſpaſm, is the ſame, in which the former is only preternatural, becauſe it is too intenſe, nor does it happen agreeably to the laws of the animal œconomy.

744. Seeing, therefore, the motive power ſeems to be derived from the vital principle (170. 209. V.), it is manifeſt, that, in inveſtigating the cauſes of ſpaſms, we muſt chiefly attend to irritations (171.), of which there are reckoned many: Acrids, mechanical and chemical, of a known and unknown kind, dolorific powers (673.), immoderate repletion, as well as evacuation, commotions of the circulatory ſyſtem, affections of the nervous ſyſtem, univerſal or particular, various irritations of the muſcles, tendons, and membranes. To this the mutual conſent which principally obtains here between the ſentient and motive powers (179. 525. 537.) much conduces; whence it happens, that ſpaſms very frequently ſupervene every immoderate ſenſation, pain (675.), anxiety (682.), and alſo perturbations of mind (532.), as if nature, by the help of theſe, endeavoured to avert or keep off the evil, of which ſenſe forewarns (675. 691.).

745. But as the vital power is not in every perſon, nor in every part of the body, equally ſtrong (175. 176.); ſo, according to the difference of this, there is produced a greater or leſs tendency to ſpaſms. For which reaſon, thoſe who labour under the diſeaſe of irritability (190.), nouriſh within

them the moſt powerful ſeeds of this ſymptom (195.).

746. The great number of effects which are produced by ſpaſm is underſtood from what has been delivered (195. 209.). They do not, however, ſo conſtantly hurt, but that they deſerve to be reckoned the moſt ſalutary aids of nature for averting and curing diſeaſes (297. 640. 641. 744.).

747. It likewiſe evidently appears, that there are manifold differences of ſpaſms, as they are either univerſal or particular, idiopathic, or ſympathetic, ſudden or ſlow, ſhrinking, or inflating, which laſt are called flatulent, &c.

748. Thoſe who diſtinguiſh ſpaſm from convulſion, call the former continued, the latter alternate contraction of the muſcles, which ſome rather chuſe to denominate convulſive motion. It will make no odds, whether the ſame or different names are uſed. Both affections certainly belong to the ſame genus; they occupy the ſame parts, and acknowledge both ſimilar cauſes and differences; beſides, it often happens that the one paſſes into the other. The diſtinction of the moderns between tonic and clonic diſeaſes is therefore underſtood.

749. Inquietude may likewiſe, in ſome meaſure, be referred to this; for, although that agitation of the members does not happen altogether againſt the will, for the moſt part, however, it cannot be ſuſpended at diſcretion when it ariſes from diſeaſe. Anxiety, pain, itching, heat, and delirium, are for the moſt part the cauſe.

750. Horror, horripilation, and a more vehement degree and rigour of the latter, more clearly diſcover the nature of a ſpaſmodic concuſſion. They happen in fevers, ſuppuration, and ſphacelus, ve-

hement affections of the nerves, ſudden and immoderate evacuations, the injudicious ſuppreſſion of theſe, but more eſpecially when nature ſtruggles with laborious efforts to expel any thing crude, acrid, corrupted, heterogeneous, or virulent, remaining internally. But ſeeing they are produced by the mind's being diſturbed with diſagreeable ideas, and the ſudden cooling of the body when warm, and have attendant upon them a ſenſe of cold under the ſkin, and external paleneſs, it is probable that there are cutaneous ſpaſms, which cauſe an unequable circulation and native heat, by the ſmaller veſſels being conſtricted, and the humours repelled inwardly.

751. It ſometimes happens, that the muſcles regularly excited into action in obedience to the will, afterwards by an involuntary agility and impetuoſity, not to be reſtrained, accelerate their motions, and hurry away againſt the determination of the will; a vitiation frequent in the muſcles of ſpeech, but not, however, peculiar to them alone; for I have ſeen thoſe who could run, but not walk. That volubility has ſomething ſpaſmodic, and therefore belongs to this place. Does it likewiſe obtain in ſpontaneous motions? We may believe that the periſtaltic motion is ſo affected, when things ingeſted by a very quick paſſage through the windings of of the inteſtines, are violently ejected from the anus.

Paralyſis.

752. Paralysis, pareſis, reſolution, ſuppoſes an extinction of the motive faculty, therefore a flaccid inertneſs of the motive fibres, and thence immobility of the parts which they ought to move. This

affection oppoſite to ſpaſm (743.), as generally extended, infeſts all and ſingular the inſtruments of motion, muſcles, and fibres, as well voluntary as involuntary. It is called exquiſite, if there is a want of ſenſe and motion at the ſame time; but, if ſenſe remains, it is called imperfect; and (ατονια), atony, if it enervates the fibres of the viſcera and veſſels.

753. It is owing to various diſeaſes: 1. Of the brain, cerebellum, medulla oblongata, ſpinal marrow, and of the nerves, thence diſtributed into trunks, ganglions, and ſmall branches; by which it happens, that the nervous power grows torpid, becomes languid, and is intercepted by the intercourſe between theſe parts, and the motive fibres being taken away. 2. Of the circulatory ſyſtem, by which the influx of the vital humours into the organs of motion, is diminiſhed and ſuppreſſed. 3. Of the vitiation peculiar to the muſcular fibres induced by diſtraction, preſſure, conſtant reſt, more intenſe action, relaxation, ſiccation, and degeneracy of the texture, by which they are rendered unfit for motion. Any one of theſe ſeparately, or more together, whether they extinguiſh the motive power itſelf (741.), or only take away the conditions, without which it cannot be excited into conſentaneous motions; in either way paralyſis muſt neceſſarily take place.

754. Wherefore, it is not difficult to diſtinguiſh, that impotency of motion from other ſpecies of morbid immobility. It is likewiſe evident, that its ſeat is exceedingly different, and that, according to its diverſity, paralyſis is divided into univerſal and particular, idiopathic and ſympathetic. Nor is the nature of innumerable miſchiefs obſcure, which,

from a defect of motion, are derived to the functions of every kind.

755. A ſlighter degree of paralyſis is debility of the motive power, by which it happens, that muſcular motions can only be exerciſed languidly, and with difficulty. Although this is chiefly referred to animal motion, it not leſs affects the vital and natural likewiſe, and acknowledges the ſame cauſes and differences as paralyſis (753. 754.). Paucity and redundance of humours, a vitiated texture, torpor of circulation, a ſuppreſſed and exhauſted nervous energy, and enfeebled ſolids, are to be principally regarded here.

756. Hence is underſtood the ſpontaneous laſſitude which ſo often foretels diſeaſes, and the different ſpecies of this enumerated by the ancients, the tenſive, ulcerous, and inflammatory.

757. Tremor likewiſe, which happens when we endeavour to move the joints, pertains to imbecility of the motive faculty (755.). But palpitation, in which parts at reſt are made to vibrate, muſt be ranked amongſt ſpaſmodic vitiations (743.).

Affections of Sleep.

758. VIGILANCE, αγρυπνια, when it is a ſymptom of a diſeaſe, is not leſs hurtful to the ſick than exceſſive watchfulneſs to the ſound (550. to 552.). It is produced when ſo great agitation happens of the animal emporium from internal diſturbances, that the organs of the ſenſes, and voluntary motions, cannot be relaxed, or the nervous influence made to ceaſe; and, therefore, the mind cannot withdraw itſelf from the mutual intercourſe with the body. For which reaſon, pain (670.), itching (679.),

(679.), anxiety, (682.), delirium (732.), fever, inflammation, ſuppuration, a more intenſe circulation, ruſhing of the humours towards the ſuperior parts, great heat, and hence the diſeaſes in which ſome of theſe are ingredients, eſpecially if irritability (190.) has acceded, induce vigilancy.

759. Of immoderate ſleep in diſeaſes manifold ſpecies occur, differing from each other in duration, degree, the concurrence of other ſymptoms; hence likewiſe in names. The cauſes may be generically reduced, 1. To languor of the ſentient and moving powers, to which fatigue of body or mind from whatever cauſe contribute, extraordinary evacuations, debility of the ſolids (157.), torpor (196.), ſlowneſs of circulation (410.), humours vapid and impoveriſhed through redundance of water (287.), gluten (283. 373.), craſſamentum (284.); pinguidity (394.), intenſe cold (427. V.), &c. 2. To the ſame powers oppreſſed, hence hindered to act, on account of various plethora (387. to 392.), obeſity (394.), too great impetus of the blood towards the head, and its return not enough expedite, infarctions of the veſſels of the encephalos, inflammation, eryſipelas, ſuppreſſed evacuations, metaſtaſis of morbific matters in the ſuperior parts.—Does that ſopor which is induced by fermented ſpirits (467.), and the uſe of narcotics, likewiſe belong to this place? 3. To thoſe things which ſuſpend the free intercourſe of the animal emporium, with the organs of the voluntary ſenſes and motions: Of this ſort a great number are reckoned, injuring by commotion, compreſſion, inundation, and deſtruction of the encephalos, ſuch as violent percuſſion of the head, depreſſion of the cranium, frac-

ture, exoſtoſis, abſceſs, various tumours generated internally, depending upon the brain, extravaſated humours, afterwards ſtagnating, hydrocephalus, and alſo the things already enumerated (2.), which act by oppreſſing the ſentient and moving powers. 4. And the mind, perhaps, weary of the reciprocal influx, ſometimes puts a ſtop to the operations of her laboratory, and, as it were, wrapt up within herſelf, the animal organs being relaxed, is at reſt and ceaſes from her work. We would almoſt be ready to conclude, that dead ſleeps, very frequently the conſequences of conſtant grief, ariſe from this origin.

760. According, therefore, as any of theſe ſingly (759.), or more complicated and various in degree, are preſent in the body,—ſo they will either induce ſomnolency only, or gentle, or more profound ſleeps, provided by their action they do not exceed the limits of the animal ſyſtem, and conſequently do not altogether oppreſs life.

761. Κωμα αγρυπνον, a ſtruggle of ſleep and vigilancy alternately, which neither permits one to ſleep, nor to be properly awake, is hence underſtood; for it ſuppoſes the cauſes of ſleep urging indeed (759.), but hindered to act with a full effect, on account of the cauſes (758.) of watchfulneſs immediately ſucceeding. It is therefore produced in diſeaſes, when pain, anxiety, delirium, terrifying dreams, or ſome other more intenſe agitation of the *ſenſorium commune*, ſupervene an inſuperable propenſity to ſleep.

762. Nor is that mixture of ſleep and watchfulneſs, to which dreams, frights in ſleep, and ſomnambulation are owing, much different. For theſe ariſe when the cauſes of watching (758.) produced in us while ſleeping, do not wholly remove the ſtate

of ſomnolency, but, however, more or leſs interrupt it; ſo that there is, therefore, diſquietude of ſome part of the laboratory of the internal ſenſes, which ſometimes diffuſes its influence through the ſyſtem of the voluntary motions. Whoever, therefore, conſiders *that ſomething* mechanical, by which ideas are wont to ariſe, may be revived, and ſome joined with others in thoſe awake, will not find it difficult to diſcover how manifold occaſional cauſes of ſleeping may be produced in the ſick, when they happen ſo frequently even to the ſound; but even plainly to perceive the number and variety of poſſible ſpecies of ſleep, and the infinity of indiſtinct combinations: Although it is not allowed us to determine, even by conjecture, the particular nature and proper ſeat of the corporeal change, which correſponds to every one of theſe.

Symptoms of the Vital Motions.

763. The circulation of the humours, the principal function of the animal œconomy, is, as it were, the common center to which the vital motions tend, and where they unite. For which reaſon the vitiations, which happen to theſe motions, principally manifeſt themſelves by their effects in the circulatory ſyſtem and its primary inſtruments, and therefore may be referred to impeded actions of the heart, arteries, and lungs.

Symptoms of Reſpiration.

764. RESPIRATION is indeed ſubject to the government of the mind, as it performs various functions, which are regulated by the will; notwithſtanding

ing which, however, it is reckoned among the vital actions, ſeeing it is both ſpontaneous, and abſolutely neceſſary for the continuance of life. The principal, therefore, of its many vitiations deſerve to be expounded in this place; as they are very frequent, and, on account of the excellence of the ſigns which they afford in diſeaſes, exceedingly uſeful to be underſtood.

765. On account of the multitude of the conditions which are required for a free reſpiration, the injuries, to which it is liable, are very numerous, and vaſtly different. The air offending by heat (424. IX. 427. V. VIII.), humidity (430. IV. V.), gravity (434.), levity (435. 437.), ſtagnation (438. 439.), corruptions (440. 442. 496. 497.), various diſeaſes of anguſtation (209.), obſtruction, obſtipation, compreſſion, ſpaſm, and coalition of the mouth, noſtrils, fauces, larynx, trachea, bronchia, and the parts through which the air ought to paſs, the lungs themſelves beſet, or become impervious by inflammation, eryſipelas, puſtules, vomica, ulcer, tubercles, congeſtions of blood, pituite, ſerum, polypoſe, gouty, rheumatic, atrabilarian, or ſome other morbific matter, either in their vaſcular apparatus or parenchymatous part; air, blood, ſerum, various humours infeſting the cavity of the thorax, ſo that the lungs cannot be expanded; likewiſe a bad conformation of the thorax, luxation, fracture, and anchyloſis of the vertebræ or ribs; alſo debility, paralyſis, and ſpaſm of the muſcles performing reſpiration, or an impeded action through pain, inflammation, ecchymoma, emphyſema, wound, or contuſion; likewiſe ſimilar vitiations of the abdominal muſcles; finally, obſtacles ariſing from the abdomen, which ſuppreſs the motion of the diaphragm, or force it upwards,

aſcites, tympany, the ſtomach or inteſtines immoderately diſtended with meat, drink, wind, fæces, &c. the uterus, and the parts which pertain to it turgent with the fœtus, air, ſerum, or ſome other adventitious matter, inflammatory tumours of the viſcera, purulent, ſchirrous, cancerous, ſteatomatous, &c. Whence it is evident; that there is ſcarce another ſymptom given, which joins itſelf to ſo many affections, and of ſo many different kinds.

766. But in ſo great a variety of cauſes, it is no wonder that the ſpecies and degrees of difficulty of breathing remarked, are ſtill more numerous; as there are dyſpnoia, aſthma, orthopnoia, ſhort, creaking, loud, and deep reſpiration, ſtrangulation, &c. the nature and origin of which are eaſily underſtood from the things delivered (765.); eſpecially if any one duly eſtimates the anxiety that is produced from an action ſo neceſſary to life being impeded, which urges nature to uſe every exertion of her powers, and therefore, with intenſe and augmented motions, to ſuccour life in danger.

767. Ἄπνοια, ſuffocation, a reſpiration really or ſeemingly aboliſhed, is produced from the ſame cauſes (765.), but of greater vehemence or duration. Hence, it either ſucceeds, ſooner or later, a gradually increaſing dyſpnoia, or, attacking ſuddenly under the denomination of a ſuffocating catarrh, threatens or induces death. It ſometimes attends a defection of the vital circulation; hence it ſupervenes greater degrees of *deliquium animi*, as a ſymptom of a ſymptom: ſometimes it ariſes primarily from its own cauſes, and afterwards, on account of the intercepted paſſage of the blood through the lungs, the circulation being inhibited, at the ſame time ſuppreſſes life; great vitiations of the air, violent affections of

the nerves, viz. paralyſis, and ſpaſm in the organs of reſpiration, ſudden oppletion of the lungs from blood, pus, catarrh, are the chief cauſes of this.

768. Cough, the ſymptom of depraved reſpiration, is a violent, convulſive, alternate, ſonorous eliſion of the inſpired air by the mouth. It therefore ſuppoſes convulſive motions of the muſcles which perform reſpiration, and likewiſe the glottis in ſome meaſure contracted; by which it happens, that the pulmonic air is driven with violence and noiſe from the larynx; nor is there room given for full inſpiration. But it is properly reckoned a medicative effort (640.), by which nature endeavours to ſweep away with a vehement excuſſion of the breath, any thing that either by its bulk or acrimony, incommodes the aeriferous ſyſtem of the lungs.—Hence it may be excited by the will.

769. Theſe things therefore are the provocatives of cough, which, by a mechanical, phyſical, or chemical action, create moleſtation to the lungs, bronchia, aſpera arteria, or larynx; corrupted air; things ingeſted, injuring by their heat, cold, acrimony, aſperity; the reception of extraneous ſubſtances into the larynx (604.), a diſtillation of acrid matter upon it, or the fauces in vicinity, redundance, craſſitude, and corruption of the mucus lubricating theſe parts; blood, ſerum, pus, ichor here collected; ſiccity, inflammation, eryſipelas, apthæ, exanthemata, and alſo moſt of the other vitiations of the reſpiratory organs above enumerated (765.), which, although they have nothing that can be ejected by expectoration, by the difficulty of breathing alone, which they induce, ſolicit nature to coughing; by which, if ſhe cannot overcome the obſtacle, ſhe attempts, however,

at leaſt, to facilitate the tranſit of the blood. But theſe are more prone to it, whoſe interior membrane of the trachea, through defect of mucus, dryneſs, tenſion, or ſome other cauſe, is more ſenſible than is proper.

770. Cough likewiſe ariſes from conſent, when the tabefaction of other parts, either by ſtimulus or the tranſlation of a morbific matter, affects the ſyſtem of circulation. Whence it is frequent in various affections of the primæ viæ, particularly the ſtomach, liver, ſpleen, teſticles, parotids, teeth, ears, brain, nerves, ſkin, &c.

771. Wherefore it is evident, what ſort of cough is called the dry, humid, convulſive, idiopathic, ſympathetic, ferine, catarrhal, ſtomachic, &c. Nor does the origin of innumerable evils lie hid, which a more violent degree of it, or long protracted, induces; for by the violent and frequent concuſſions of the lungs, abdominal viſcera, and the whole body, the inſpiration being interrupted, the blood put into commotion, the equable tranſit of the ſame through the lungs impeded, the reſpiratory muſcles perpetually irritated and inordinately agitated, there behoves to be produced defatigation, a vitiated coction of the aliment, vomiting, hernias, abortion, congeſtion of the humours in the head, debility of the pulmonary veſſels, eruptions of blood, univerſal convulſions, ſuffocation, and the innumerable evils which enſue from theſe.

772. Sternutation is likewiſe to be referred to this; a ſpecies of convulſive motion not unlike the former, which expels the air, firſt inſpired in conſiderable quantity, with one effort of a very violent, ſonorous expiration, through the paſſages of the noſe and mouth, ſo that the breath violently ſtrik-

ing upon the membrane inveſting thoſe cavities, ſweeps and abſterges its ſurface, and moiſtens it with the expreſſed humidity, that thoſe things which are troubleſome may be wiped off and expelled. A ſalutary endeavour, therefore, ſupervenes irritations of the noſtrils, fauces, and eyes; and conſequently many diſeaſes of thoſe parts. It is likewiſe produced in manner of ſpaſm from cauſes more univerſal, or whoſe ſeat is more remote from the noſe, eſpecially in perſons of a more irritable nature (190. 745.). It is not however always uſeful; for when it cannot ſhake off the ſtimulus, fatiguing by an unavailing concuſſion, hurts no leſs vehemently than the cough (771.).

773. Laughter, as it is a convulſion of the reſpiratory muſcles, which agitates the breath confined in the aeriferous ſyſtem with ſudden, ſmall, and reciprocal concuſſions, like tremulous vibrations; and, therefore, by a protracted expiration, ſuſpends a full inſpiration, deſerves a place equally among the ſymptoms as among the noxious powers (521.). For it both happens without the conſent of the mind from corporeal ſtimuli, which irritate the diaphragm, and with it the abdominal muſcles acting in conjunction with it, the other organs of reſpiration, and next the muſcles of the face, even by conſent. Whence it attends affections of the diaphragm indeed primarily, next of the ſtomach, ſpleen, and uterus, alſo thoſe which diſturb the *ſenſorium commune*, and ſometimes febrile and other commotions, an evil familiar to the hypochondriac, hyſteric, maniac, phrenitic, &c. Hence is underſtood a morbid weeping a-kin to laughter, of which there is a frequent tranſition to the former.

774. Sighing, by the aſſiſtance of the voluntary muſcles, draws in the breath very deep, even to the bottom of the breaſt, and, more forcibly than uſual, expels it upwards. Thus nature, by a great and long draught of reſpiration, increaſes the beneficial effects of the air, procures refrigeration to the ſuffocating heat, excitement to the pulmonary circulation, a remedy to difficulty of breathing, and eaſe to anxiety. Hence the cauſes are whatever things induce grief (682. to 691.).

775. Yawning is an inſpiration like enough to ſighing (774.), more vehement however, and, for the moſt part, iterated in a more intenſe degree, drawing in the air through no other paſſage but the wideſt meatus of the mouth; and is, therefore, attended with a violent contraction of thoſe muſcles, which, by ſeparating the jaws, mouth, and lips, and dilating the iſthmus of the fauces and glottis, can prepare the wideſt, and likewiſe neareſt entrance to the external air. It is, therefore, an auxiliary ſymptom (98. 101.), the action of nature alone, and is more beneficial than ſighing, as it happens with a ſalutary intention to thoſe growing drowſy, although ſound; ſo likewiſe to the ſick, whoſe ſtrength languiſhes on account of vitiations of the nervous ſyſtem, or inertneſs of the vital circulation; beſides, it is frequent in febrile attacks, hyſterical, hypochondriac, comatoſe, and chronic affections.

776. Pandiculation, very frequently joined to this (775.), which, with the breath long confined, and an effort extended over the whole ſyſtem of the voluntary muſcles, vehemently diſtends the whole joints of the body, is of the ſame ſort, not only

the conſequence of torpor, but alſo the natural remedy.

Symptoms of the Heart's Motion.

777. PALPITATION of the heart ſuppoſes convulſive contractions of it, which, by a vehement ſtriking againſt the neighbouring parts, far exceed the natural. It therefore partakes of the nature of a ſpaſmodic affection, and is underſtood from (743. *et ſeq.*). But very many occaſional cauſes of this vitiation are ſeated in the high degree of vital power, which the heart, before all other parts, poſſeſſes: Great diſturbances of the nervous kind in the hyſteric, hypochondriac, and more irritable; likewiſe diſorders in the circulatory ſyſtem, whether having ariſen in it primarily, from the former affections, or elſewhere, propagated as far as the heart; ſome more powerful irritations of the heart, or even impediments, which greatly reſiſt the due admiſſion or expulſion of the blood. It is, therefore, produced from violent affections of the mind, ſuch as ſudden fear, exceſſive venery, too great exercitation of the mind or body, ſpaſms of other parts, pains, anxiety, febrile commotions, redundance of humours, paucity, lentor, various acrimonies, ſcorbutic, atrabilarious, arthritic, ſcabious, ulcerous, cancerous, or virulent matter, or certain ſuppreſſed evacuations; alſo from manifold difficulties of breathing (765.), by which the blood paſſes not eaſily through the lungs; likewiſe from various tabefactions of the abdominal viſcera, eſpecially the ſtomach, badly affected with crude, acrid, corrupted matters, air, worms, and other heterogeneous bodies; obſtruction, inflammation, ulcer, compreſſion,

ſion, diſtenſion, irritation; finally, from the heart itſelf, its auricles, greater veſſels, or the pericardium being preternaturally affected with inflammation, ulcer, aneuriſm, polypus, worms, hairs, calculus, dropſy, ecchymoſis, excreſcence, an oſſeous or cartilaginous degeneracy of the texture, or ſome anguſtation. But it is eaſy to perceive that moſt of theſe contribute in ſeveral ways, and that ſome frequently join with others; nor are there a few things related among the cauſes of this ſymptom, which, very often however, are rather the conſequences of the ſame, and afterwards by their acceſſion are changed, as it were, into ſecondary cauſes. Finally, it is of uſe to know, that the evil, recurring at intervals, principally increaſes by thoſe things which drive the blood with greater impetuoſity towards the heart.

778. Tremor of the heart, whether it has been a ſlighter degree of palpitation, or may be owing to imbecility of its powers, is known from what has been advanced (757. 777.). Moreover, other anomalies of the heart's motion, ſeeing they manifeſt themſelves more in the pulſation of the arteries, are more fitly referred to that title.

Symptoms of the Pulſation of the Arteries.

779. PULSATION takes place, if the blood, driven by the force of the heart into the arteries, diſtends and puſhes out their coats. But, that it may be done conſiſtently with the laws of health, there are required an efficacy of the heart, a due quantity and flow of the blood, arteries contractile and capable of expanſion, and a free paſſage to the circulation. In the vitiations of theſe, therefore, the nature of the alienations muſt

be ſought, which happen to the pulſes of the ſick. Of theſe, however, as they are exceedingly manifold, and diſtinguiſhed by the ancients more ſubtilely than uſefully, omitting thoſe of ſmaller moment or eaſy to be underſtood, we ſhall only exhibit the principal.

780. A more frequent pulſe, to be eſtimated according to age, ſex, temperament, and different uſe of the non-naturals, if it obtains in general, ſuppoſes a more frequent contraction of the heart, and is conſequently owing to the cauſes of that. Thither may be referred all incitements of the heart whatever, whether they have been of that ſort which increaſe the afflux of the venous blood, or which ſtimulate by their acrimony, or, in ſome other way, reſiſt the action of the heart. All which, indeed, are ſo much more powerful, when the heart itſelf is likewiſe immoderately irritable: Beſides, from the great conſent of the ſame with the whole body, it happens, that the turbulent agitations of other parts, chiefly of the nervous ſort, are eaſily transferred thither. Hence, moſt of the things by which palpitation is raiſed in the heart (777.), have, in like manner, a place here; and, therefore, a frequency of pulſe, often ſalutary, attends innumerable diſeaſes, more eſpecially, however, all ſorts of fevers, and is to be reckoned among the active ſymptoms (101.). But is there likewiſe given a topical point in a particular part of the arterial ſyſtem? It will be given, if there is a real partial fever, and not then to be traced only from the heart being incited. The nature of a ſlower pulſe is eaſily underſtood from the foregoing.

781. An artery, beating with a greater ſtroke than dilatation, is ſaid to beat hard. That happens,

when the blood is puſhed on with a vehement, and, at the ſame time, a more quick contraction of the heart, but cannot, however, expand the veſſel regularly. There is, therefore, either ſubjoined a vitiation in the coats of the artery, leſs obſequious, on account of ſiccity, rigidity, ſpaſm,—or a diſeaſe of the cavity immoderately diſtended, from the blood being copious, rarefied, inſpiſſated, or accumulated by reaſon of an interrupted transflux. Whence is it evident why a hard pulſe is ſo frequent in inflammatory diſeaſes? Nor does the nature of a hard pulſe lie hid?

782. The pulſe intermits through various vitiations, conſiderable or more ſlight, univerſal or particular. For the contraction of the heart in manner of a ſpaſm (746.), longer continued, torpor of the ſame (196. 755.), or an inefficacious contraction, throwing the blood into the arteries with ſmaller force, as well as in ſmaller quantity; a more ſparing influx of the venous blood into the heart; the ſame either immoderate, or altogether deficient; an unequal, more impeded, or interrupted arterial flux, various depravities of the arteries reſiſting the ſyſtolic and diaſtolic motion of the coats, tend to this effect. But the things fit to produce theſe are innumerable. Topical affections of the heart, and parts pertaining thereto, as inflammation, aneuriſm, polypus, calculus, worms, concretion, induration, dropſy, &c. (777.), ſimilar vitiations of the arteries, great impediments of reſpiration (765.), redundance of blood, paucity, a viſcid cacochymy, various acrimonies, diſorders of the *primæ viæ* in vomiting, cholera, alvine fluxes, worms, ſpaſms, pains, &c. and, finally, diſtempers of the nervous ſort extended through the vital viſcera and ſyſtem of circulation, the vital energy being either torpid (196.), or too irritable (190.).

783. Various degrees of a diminiſhed and deleted pulſe are enumerated, according to the different number and intenſity of the conſequences which it induces: A ſlighter failing, inducing paleneſs (heat, ſenſe and motion, however, remaining), is called 'εκλειψις; when paleneſs is accompanied with an impotency of animal motion, λειποθυμια; when to the former ſtates are ſuperadded an extinction of the native heat, λειποψυχια; when an univerſal cold, and cold ſweat is induced, ſenſe and motion being at the ſame time almoſt aboliſhed, συγκοπη: In fine, all the ſymptoms of life being aboliſhed, there likewiſe acceding απνοια (767.), ſuch a reſemblance of death is exhibited, as ſometimes it may be reaſonably doubted, whether life or death is preſent; this is denominated 'ασφυξια. But as the univerſal defection of the ſtrength, which attends it, teaches us, that the vital circulation of the blood fails in like manner as the pulſe,—it is evident, that theſe vitiations are owing to a ſinking of the heart, and conſequently ariſe from thoſe cauſes which are capable to induce this. Of this ſort are all vehement affections of the mind, the idea of ſomething frightful, diſagreeable odours in the hyſteric, hypochondriac, gravid, puerperal, thoſe exhauſted by hunger, watchfulneſs, fatigue, or a ſevere diſeaſe; various inſalubrities of the air, miaſmata, poiſons, draſtic medicines, worms, aliments of a corrupted juice, putrid, ſcorbutic, atrabilarian cacochymy, &c. morbific matter ſtrongly affecting the vital parts and nerves; from thence ſevere pains, anxiety, great heat, ſpaſms; likewiſe great and ſudden inanition, too great derivation of the vital liquid from the heart and encephalos, or a more ſparing or intercepted afflux to theſe parts, and transflux through the ſame; and conſequently multifarious affections of

the encephalos, heart, and lungs, like to theſe enumerated (782.). Becauſe, by theſe powers, either the influx of the venous blood into the cavity of the heart is ſuſpended, or the muſcular energy of the heart itſelf enervated. In either caſe, the heart behoves to be at reſt, and, of courſe, the circulation to ceaſe. Nor does the nature of the defections of the mind ſeem different, which, it is related, ſome can procure at diſcretion, although it is not evident by what exertion of the will that is effected.

784. But, if a ſingle artery ceaſes to beat, the nature of the evil leſs hazardous is thence eaſily found (779. 782. 783.); as alſo, of other alienations of the pulſe, which, in ſingle pulſations ſeparately, or in a ſeries of ſucceeding ones, are in fact obſerved: ſuch are the ſtrong, weak, great, ſmall, unequal in various ways, undulating, vermicular, creeping, ſerrated, double, throbbing, wavering, myurus, intermitting, &c. It is worthy of being remarked in general, that there is ſcarcely another power given more capable of diſordering the pulſe than ſpaſms (742.), and, therefore, that a great part of the vitioſities of that ſort are to be traced from theſe. A more particular expoſition, however, as it pertains to the ſemiotic pathology (16. II.) does not belong to our purpoſe.

Symptoms of the Natural Actions.

785. The natural ſyſtem, appointed for the preſervation of the body, although it is eſteemed leſs noble than the vital and animal, by its uſe, however, and neceſſity, is not inferior; when it is ſcarcely to be reckoned any thing, or very little,

which is not durable; but, by the multitude and diverſity as well of the organs as effects, which it exhibits, it even almoſt excells its aſſociates. The immenſe number of leſions, therefore, which may happen here, requires a methodical expoſition.

Leſions of the Natural Appetites.

786. As the matter of nouriſhment, when there is need, is admitted from without, that laboratory is likewiſe provided with its own ſenſations (669.), which admoniſh a perſon of want, and impel him to procure food; from hence natural hunger and thirſt, the latter requiring drink, the former meat, matter equally neceſſary to the firm parts and humours. Both have their proper medium in health, and their own vitiations in the ſick.

787. The deſire of eating, exceedingly different in the ſound, is likewiſe variouſly alienated by diſeaſes. For it is immoderately increaſed in bulimy, fames canina, lupina; is diminiſhed or altogether aboliſhed in δυσορεξια, *i. e.* want of appetite, ανορεξια anorexy, or αποσιτια; is depraved in κιττα, or longing.

788. Inordinate hunger is either owing to emptineſs, which requires repletion, or to a ſharper ſtimulus, which expects mitigation from aliment ingeſted. For which reaſon it is chiefly troubleſome to thoſe exhauſted by abſtinence, animal motion, immoderate perſpiration, ſweat, alvine flux, other excretions, as lactation, and diſeaſes, thoſe ſubject to worms, or in whoſe ſtomach there is an acid, ſaline, bilious, or atrabilarian acrimony; to theſe eſpecially acceding impotency of mind, a wandering imagination, too much ſenſibility, irritability, in young people, in the female ſex, hyſteric, hypochondriac, epileptic,

leptic. It is called bulimy, when *deliquium animi* enſues upon hunger not ſatisfied; *fames canina*, when things voraciouſly ingeſted are quickly returned by vomiting; but, if they are ſuddenly expelled by the anus, ſome call it *fames lupina.*

789. The appetite is proſtrated in various degrees by a vitiation of the ſtomach, oppreſſed, inflamed, ulcerous, ſchirrous, callous, aphthous, by phlegm, ſabulous, terreous, heterogeneous, corrupted things, labouring under atony (752.), inordinate motions (743.), either on account of a proper affection, or by conſent; likewiſe by defect, an aqueous, mucous inertneſs, and various degeneracy of the menſtrua of firſt digeſtion, bile, ſaliva; alſo by a corruption of the body over replete with wholeſome or depraved humours, on account of a ſlothful ſomnolent manner of life, a languid circulation, and ſuppreſſed evacuations; ſympathetic diſorders of the nervous ſyſtem, ſpaſmodic, delirious, ſoporific, dolorous, &c. blunting the natural ſenſe; finally, by nature being exhauſted, oppreſſed, or impeded by ſome ſevere, acute, or chronic evil, that ſhe may ſhun the taſk of performing coction. As it is therefore a ſymptom attendant upon innumerable diſeaſes, ſo it appears, that it is ſometimes produced becauſe of impediments of coction; ſometimes from this, that the body does not ſtand in need of aliment; at other times, on account of a ſuppreſſed perception of the natural ſtimulus; which circumſtances, duly weighed, ſhow, that we are not conſtantly to apprehend ſo many and ſo great miſchiefs from abſtinence, the conſequence of anorexy in the ſick, equally as in the ſound, who are ſtarved (452. 453.).

790. Loathing of food, αποσιτια, acknowledges the ſame cauſes (789.), but in greater degree; putredity and corruption infecting the ſtomach, its too great ſenſibility, irritability, and weakneſs, liable to pain, uneaſineſs, ſpaſm, nauſea, and vomiting from the ingeſta; alſo errors of the imagination are here principally regarded. A particular averſion to meat, produced from diſeaſe, for the moſt part is the voice of nature (643.), which muſt be obeyed.

791. Longing, which ſuppoſes an appetency, joined with a loathing of other meats for a certain kind of eatables, and a voracity ſcarcely to be ſatisfied; and luſting, which likewiſe impatiently deſires, and greedily devours, unnatural, abſurd, and uncommon things, not fit for eating, is of a ſimilar nature. But even, although a depravity of imagination may be joined, very frequently, however, ſuch things as are deſired prove the remedy, by which, what is noxious within is corrected, or by the diſturbances raiſed from intemperance ejected; or that a paucity of the alible juice may be oppoſed to a burdenſome redundance of humours, that it may not be more increaſed by aliment.

792. Thirſt, which nature has appointed to indicate the neceſſity of taking drink, is unuſually urgent in diſeaſes, as often as the ſuperior tract of the *primæ viæ*, the ſeat of that ſenſation, or along with this the reſt of the body, at the ſame time, requires humectation, by which, either a deficient humour is ſupplied, a more ſpiſſid diluted, or one more acrid attempered; hence ſoftneſs is reſtored to the firm parts, meability to the canals, and freedom to thoſe humours about to paſs. Hence immoderate diſſipation of the humours, evacuation, or ſpiſſitude, a derivation and collection of the lymph,

lymph beyond the courſe of circulation, obſtruction, ſpaſmodic conſtriction and compreſſion of the ſmaller veſſels, a muriatic, ammoniacal, alkaline, ſpiritous, aromatic, putrid, bilious, rancid, aduſt, virulent acrimony, in fevers, alvine fluxes, diabetes, &c. inflammatory, purulent, putrid, bilious, catarrhal, exanthematic, ſpaſmodic, peſtilential diſeaſes, dropſy, ſcurvy, rickets, and many others, create thirſt, which, however, muſt be fairly diſtinguiſhed, whether it pertains to its own ſenſory, or to the whole body.

793. The abſence of thirſt, therefore, in diſeaſes by their nature thirſty, is likewiſe morbid, and ſuppoſes the organ of thirſt (792.) to be continually moiſtened by cough or ptyaliſm, or by a reſolution of its nerves deprived of ſenſe, or that the mind is alienated.

Impeded Actions of the Primæ Viæ.

794. As there are very many inſtruments of manducation, as well as powers and conditions, without which it cannot be rightly performed; ſo it is differently diſordered by many and divers vitiations of various parts. Of this ſort are wounds, inflammation, ulcer, excoriation, tumour, *αγκυλογλωσσον* (223.), mutilation, &c. of the mouth, lips, tongue, jaws, defect, weakneſs, and pain of the teeth; fracture, luxation, anchyloſis, and caries of the jaw-bones, ſpaſm, pain, paralyſis, &c. of the muſcles moving theſe parts; finally, a deficiency of the ſaliva.

795. The leſions of deglutition are likewiſe many; for it either fatigues by the frequent abortive endeavours, or is painful and laborious, or only tranſmits drink, but not ſolid morſels in like manner,

ner, or theſe alone and not the former; or the things to be ſwallowed fall upon the *aſpera arteria*, or return by the mouth and noſe. The manifold ſeats of this vitiation muſt be ſought in the tongue, palate, tonſils, uvula, pharynx, larynx, œſophagus, ſtomach, jaws, neighbouring vertebræ, muſcles of theſe parts, affected with pain, wound, inflammation, excoriation, ulcer, tumor, luxation, fracture, caries, bad conformation, ſpaſm, paralyſis, various anguſtation (209.), dryneſs. For there either ariſes from thence an ineffectual deſire of ſwallowing, or the paſſage for the matter to be ſwallowed is impeded, or the due action and direction of the motive powers muſt neceſſarily fail.

796. The ſtomach of thoſe affected with hiccup, and contiguous to it the diaphragm, ſeems to be concuſſed with a momentary convulſion, to which a conſtriction of the glottis being joined, it happens, that the air haſtily inſpired emits a ſound. Hiccup, therefore, to be reckoned amongſt ſpaſms, acknowledges the ſame cauſes (743. *et ſeq.*), but which affect the œſophagus, ſtomach, or diaphragm immediately, or by conſent from other parts; ſuch as a greedy ingurgitation of a dry or coarſer bolus, a greater draught of ſome liquid, or one that is acrid, immoderate repletion or irritation of the ſtomach from acrid meat, drink, medicines, poiſons, worms, foreign ſubſtances, corrupted, acid, bilious, putrid, rancid, contagious, arthritic, catarrhal, ulcerous, cancerous, ſphacelous matter, generated in the ſame place, or brought thither from other parts; cold received at the cardia; wound, inflammation, eryſipelas, exanthemata, ulcer, excoriation, &c. of the œſophagus or ſtomach; inflammation, wound, or contuſion of the diaphragm, or

its ſeverer agitation by laughter or weeping; fracture, luxation, and diſtortion of the inferior ribs, the neighbouring vertebræ, and cartilago enſiformis; likewiſe inflammatory, dolorous, and ſpaſmodic affections of the inteſtines, meſentery, liver, ſpleen, pancreas, uterus, &c.; finally, violent diſorders of the nervous kind on account of affections of the mind, exceſſive evacuations of whatſoever ſort, leſions of the encephalos, febrile motions, critical efforts, &c. Wherefore it is evident, that there is ſometimes a matter preſent which nature endeavours to ſhake off by this auxiliary ſymptom; at other times nothing ſalutary is intended by the hurtful motions: But when there is here given a joint convulſion as well of the ſtomach as of the diaphragm, may there not a ſlighter ſpecies be reckoned which pertains to any of theſe two parts?

797. Vomiting is a violent and faſtidious expulſion of thoſe things which are contained in the ſtomach, or are collected there from the neighbouring viſcera, by the upper orifice. This is effected by ſpaſmodic motions of the fauces, œſophagus, ſtomach, inteſtines, diaphragm, and abdominal muſcles, conſpiring in a moſt ſurpriſing manner to a full effort of exertion and ſtraining: But from the great mobility (175.) of the ſtomach, and its extenſive conſent with the whole body, it happens that the incitements to vomiting are almoſt innumerable, and ſome of theſe are domeſtic to this bowel, others foreign. To the former it may be proper to refer whatſoever things by their bulk, weight, tenacity, acrimony, impeded paſſage by the pyloris, irritate the fibres of the ſtomach, and alſo topical vitiations, which induce irritability. Of the latter ſort are affections of parts in whatſoever way conſenting,

ſenting, as well adjacent as more remote, of the fauces, œſophagus, diaphragm, liver, gall, bladder, ſpleen, meſentery, pancreas, inteſtines, omentum, peritonæum, kidneys, ureters, veſica urinaria, uterus, encephalos, *ſenſorium commune*, and nerves. The principal things therefore are already enumerated among the cauſes of hiccup (796.), and there is in like manner given idiopathic and ſympathetic vomiting, with or without matter. But ſeeing vomitions, according to their degree of intenſity, differ from one another, it is likewiſe credible, that ſpaſmodic efforts of all the parts which we have mentioned above, are not here required; and conſequently, that the controverſy of authors diſſenting about this matter, may be decided. Nauſea, which is a ſqueamiſh commotion of the ſtomach threatning vomition, is owing to the ſame cauſes, but ſlighter: and alſo eructation of matter contained in the ſtomach.

798. Air, or an elaſtic ſpirit like to it, pervading the cavity of the *primæ viæ*, furniſhes matter to the ructus and flatulency which infeſt this laboratory; which is either admitted externally, or evolved from the ingeſta, or indigenous matter internally, by efferveſcence, fermentation, putredity, heat, and inordinate motion. This, when for ſome time reſtrained by collapſion, convolution, compreſſion, eſpecially by ſpaſmodic conſtriction of the œſophagus, ſtomach and inteſtines, in the interim, perhaps increaſed with new ſupplies, or expanded into a greater volume, urging the ſides of its priſon, and reciprocally repreſſed by theſe, at length let looſe, conceives an impetus, and an exit being given, makes its way upwards or downwards, or at leaſt, moved from its place, wanders through

the alimentary tube, and creates ructus, flatulency, crepitation, and borborygmi. The voluntary ſtrainings of the diaphragm and abdominal muſcles, may likewiſe aſſiſt the propulſion: As from thence, according to the various degree of impetus, the exploſion is mute or ſonorous, ſo the flatus emitted, according to the diverſity of the matter which it carries alongſt with it, muſt neceſſarily be dry, moiſt, acid, putrid, rancid, bilious, &c. Therefore crude, flatulent, efferveſcing, acrid things under the title of meat, drink, medicines, poiſons, faults of coction, putredity in the *primæ viæ* in whatſoever way produced, worms, inordinate and ſpaſmodic motions of theſe viſcera from paſſions of the mind, a cardialgic, iliac, colic, hyſteric, hypochondriac, epileptic affection, alvine fluxes, cholera, vomiting, hæmorrhages, wounds, fevers, &c. alſo impediments of a free paſſage from obſtruction, obſtipation, compreſſion, &c. contribute to this effect, either by affording ſome elaſtic flatus, or by confining it, that it cannot paſs to and fro, exhale, or be abſorbed.

799. A coſtive belly, although, for the moſt part, it denotes vigorous health, by its exceſs, however, is very troubleſome to the ſick, and not leſs heightens than creates diſeaſes (558.). It has for its cauſes, either an inſuperable reſiſtance of matter, impediments of the paſſage, or a vitiation in the motive powers. It is therefore produced from drier, compacted, indurated, accumulated, pitchy fæces, from defect or tenacity of the lubricating mucus, from obſtruction, obſtipation, compreſſion, ſpaſm, concretion, *intus ſuſceptio* (247.), or contortion (256.) of the inteſtines, being impervious, moved in retrogreſſion, weakened by dilatation, reſolved,

ſolved, perforated, or cut, defect or inertneſs of the bile, from the languid action of the diaphragm and abdominal muſcles, or an impeded niſus of the ſame.

800. Ileus, volvulus, in which there accedes to an obſtinately conſtricted belly, a violent vomiting of the whole contents of the alimentary canal whatſoever, alſo of ſcybali, clyſters, ſuppoſitories introduced at the anus, is underſtood from (797. 799.). For it generally ſuppoſes an obſtacle in the canal of the inteſtines produced from inflammation, abſceſs, ſcirrhus, cancer, calculus, hardened fæces, worms, hernia, contortion, *intus ſuſceptio*, compreſſion, concretion, or convulſion, by which the tranſit of the matter to be paſſed downward is intercepted; and likewiſe ſupervening ſpaſmodic motions of thoſe parts, which occaſion vomiting, directed upwards. But theſe alone ſometimes, without any impediment in the canal, occaſion this.

801. Diarrhœa, looſeneſs, an alvine flux, is a frequent and copious excretion of liquid matter by the belly. Things ingeſted, and the great plenty of juices, which, according to nature, are conſtantly conveyed into the *primæ viæ*, the extenſive intercourſe of the belly with the reſt of the body, by which means the various humours may be brought thither from every part, furniſh matter both in abundant quantity and very different; from whence, the manner of that ſurpriſing profuſion can be diſcovered, as well as the principal differences of this ſymptom conſtituted. The inordinate and more accelerated motion of the inteſtines cauſes an expulſion of the matter ſupplied, and prevents the bibulous orifices of the ducts from abſorbing the liquor as they ought. Conſequently, irritability of the

inteſtines chiefly brings on this, and whatever can provoke it, either by a diſtending bulk, injuring acrimony, or diſturbances imported from other places; an exceſſive quantity of meat or drink; flatulent or acrid things ingeſted or generated internally; a greater impetus of the humours directed towards the *primæ viæ*; ſuppreſſion of other excretions, eſpecially the cutaneous; impediments of abſorption, on account of the veſſels being ſhut by aphthæ, puſtules, ſordes, ſpaſm, or obſtructions of the meſentery; a more acrid bile, atrabilis, hydroptic, ſerum, febrile, inflammatory, purulent, ichorous, putrid, cancerous, catarrhal, contagious, ſcorbutic, arthritic matter conveyed thither from whatſoever place, commotions of the nervous kind from paſſions of the mind, cold received, dentition, the puerperal ſtate, hyſteric, dolorous, convulſive, &c. affections.

802. Dyſentery, a diſeaſe of the inteſtines, is a troubleſome diarrhœa, with vehement and tormenting pain. There are ejected liquid, acrid, putrid, fœtid ſubſtances, blood, pus, ſanies, bile, ſerum, mucus, atrabilis, ſometimes with a liquid excrement, and ſometimes with caruncles, membranes, &c. There is, therefore, joined an inflammation, excoriation, or exulceration of the inteſtines, either ariſing originally from its own cauſes, or afterwards induced from the acrimony of the transfluent matter. But that the ſources of acrid things are not leſs manifold than different in their natures, is eaſily underſtood from (801.).

803. Teneſmus, which is a frequent and implacable deſire of going to ſtool, with greater ſtraining than is correſpondent to the bulk of the matter to be excreted, ſqueezing out ſomething of mucus,

pituite, blood, pus, ſanies, bile, excrement, &c. often attends dyſentery. But it happens, when the further extremity of the *inteſtinum rectum*, which nature has rendered ſenſible of the preſſure of the fæces, is immoderately irritated; whence every thing acrid, abſtergent, eroding, as well as thoſe which rub by their hardneſs, or wound by their ſharpneſs, all extraneous matters, bones, calculi, worms, from whatſoever place conveyed thither, may be in fault; but eſpecially the over ſenſibility of the part affected with inflammation, excoriation, eryſipelas, ulcer, fiſtula, wound, hæmorrhoides, if it accedes to the former ſtates, likewiſe heighten the pain. But that malady alſo ſupervenes, by conſent, various vitiations of the bladder, urethra, perinæum, inteſtines, uterus, and vagina, and diſorders of the nervous ſyſtem.

804. Lientery, mobility of the inteſtines, muſt affect, when things ingeſted paſſing ſuddenly through the *primæ viæ* to the anus, are from thence ejected, ſo that they neither abide coction nor corruption. The cauſes are an inability of the ſtomach and inteſtines to perform concoction, joined with too great irritability (190.), laxity of the pyloris, an impeded action of the abſorbent veſſels (801.). However, the want of reflection either brings on indiſpoſition, or haſtens its progreſs.

805. Fluor cœliacus, chyloſus, a gentler ſpecies of lientery (804.), throws out from the anus the uſeful juice of the aliment, not duly concocted, together with the fæces. The powers of the ſtomach being therefore intire, the fault lies wholly in the inteſtines, by which they propel the contents more rapidly than is proper, and cannot abſorb the chy-

lous matter, the vitiation either reſiding in the orifices of the abſorbent veſſels, or deeper (801.).

806. Cholera is a tumultuous agitation of the *primæ viæ*, by which, whatever is there contained is upwards and downwards violently ejected. This evil affecting the ſtomach and inteſtines in common, compoſed of vomiting and purging, is likewiſe owing to ſimilar ſpaſmodic motions (797. 801.). But theſe are excited by innumerable things; meats and drinks ſtimulating by their quantity, acrimony, flatulency, fermentation, pinguitude, corruption, and refrigeration; hence acid, putrid, rancid, bilious, verminous matter loading the canal, contracted from errors in diet; draſtic, emetic, purgative, mercurial medicines, poiſons, a redundance of bile, turgent atrabilis, rheumatic, arthritic, febrile, ſcorbutic matter, of ſweat, perſpiration, ſuppreſſed menſes, repelled exanthemata, converted this way; diſturbances excited from heat or ſudden changes of the air, emotions of mind, pregnancy, dentition, pain, hyſteric, and hypochondriac evils.

807. The ſpecies of cholera, diarrhœa, dyſentery, which they call dry, becauſe what is excreted is rather flatulent than moiſt, are underſtood from what has been delivered (798.).

808. It ſometimes happens, that the ſick paſs their excrements involuntarily and inſenſibly, which is called incontinence of the belly, and ſupervenes delirious, ſpaſmodic, paralytic diſeaſes, or particular diſorders of the *ſphincter ani*.

809. But when the alvine fæces are excreted from the urethra, perinæum, vulva, or any other ſeat of the abdomen or pelvis, beſides the anus, that only happens by a wound, ulcer, fiſtula, or depraved

conformation, which prepare a foreign paſſage to the contents of the inteſtines.

Depravities of making Water.

810. THE excretion of the urine, which is within the bladder, is ſuppreſſed by a number of affections of the bladder and urethra, which either deſtroy the propelling power, or hinder the efflux by obſtructing the meatus: Of this ſort, there are innumerable things, ſuch as inflammation of the bladder, or of its neck, ſpaſm of the ſame, impotency of its muſcular fibres for an effectual contraction, on account of immoderate diſtenſion from the retained urine ’ευρυσμα (203. I.), *i. e.* dilatation, hernia (238.), rupture, wound, gangrene, reſolution of the nerves from leſions of the ſpinal marrow, the membranes being beſet with calculous cruſts, callus, fungus, or ſome tumour; inflammation of the urinary paſſage, ſpaſmodic conſtriction, obſtruction from calculus, pituite, grume, pus, worms, &c. (209. I.), obſtipation from callus, cicatrix, fungus, tubercle, tumour of the mucous glands, *caruncula ſeminalis*, varices, puſtules, &c. (209. II.), collapſe (ibid. IV.), coalition (ibid. VI.), diſtortion. Often, however, the origin of the evil is intirely owing to the neighbouring parts, as when the *inteſtinum rectum* is ſwelled by hardened fæces, flatus, hæmorrhoidal tumour, inflammation, where the uterus is diſtended with the fœtus, blood, ſerum, or air, or labours under ſcirrhus, cancer, oſteogeny, or prolapſe; or when there are vitiations of this ſort in the vulva, perinæum, proſtate gland, *veſiculæ ſeminales*, neighbouring muſcles, the penis or its preputium, which compreſs the neck of the bladder

or urethra. And this is what the moderns call ισχουϱια, or ſuppreſſion of urine.

811. There is another kind called baſtard, in which the urine cannot be excreted, becauſe none of it is brought into the bladder, by ſome diſorder of the kidneys or ureters, which either ſuſpends the ſecretion of the urine, or hinders it from arriving at the bladder. The blood, therefore, offending by quantity; a glutinous, phlogiſtic, atrabilarian ſpiſſitude, diſtending and compreſſing its veſſels, compreſſing thoſe in vicinity, or having eſcaped from the veſſels, and gathered into a ball; inflammation, abſceſs, ſcirrhus, tabefaction, ſpaſm from acrid matter conveyed thither, or ariſen by conſent from elſewhere; obſtruction from mucus, pus, ſand, calculus, worms, torpor from contuſion, diſtraction, gangrene, reſolution of the nerves, compreſſion from various vitiations of the adjacent parts, are wont to be in fault; ſometimes the ſame vitiation, or different, falls upon both kidneys, or ureters. But it happens from the near connection of theſe parts, and the mutual conſpiration of the actions which they perform, that the one eaſily draws the other into a participation of the evil.

812. When the urine is paſſed uneaſily, not without great ſtraining, or even with pain, this difficulty of making water is called δυσȣϱια, which, as it is a certain degree of ισχουϱια, or ſuppreſſion (810.), it ariſes from the like vitiations, but ſlighter. If pain is abſent, the cauſe of the evil is either owing to a mucous, purulent, bloody ſpiſſitude of the matter which is expelled, or anguſtation ariſing ſomewhere, or to a rigid or flaccid inertneſs of the expelling powers. But if there is pain in making water, the urine is either acrid or mixed with acrid, ſharp, he-

terogeneous matters, or too great ſenſibility of the parts, from defect of mucus, inflammation, or ulcer.

813. Στραγγουρια, ſtrangury, like to teneſmus (803.), is a conſtant inclination and endeavour to make water, in which, however, little urine is ſqueezed out drop by drop, for the moſt part accompanied with great heat. The cauſes are underſtood from (803. 812.). The primary are, manifold acrimonies of the urine from meat, drink, medicines, poiſons, febrile, ſcorbutic, purulent, ichorous, arthritic, catarrhal, or other morbid matter ſome how depoſited in the bladder; a rubbing calculus; deficiency or acritude of the mucus; inflammation, excoriation, ulcer, ſpaſm of the bladder, or urethra; finally, conſent with the inteſtinum rectum, anus, perinæum, uterus, vagina, &c. differently affected.

814. It is called incontinence of urine, when the water is not retained in the bladder, but ſlowly, without ſenſe and effort, ſpontaneouſly, by a continual dribbling, falls from the urethra. This diſagreeable ſymptom ſuppoſes the faculty, by which the urine is retained, totally aboliſhed, and conſequently impotency of the fibres, by which the orifice of the bladder is ſhut. It is induced by paralyſis, wound, contuſion, dilatation, ulcer, gangrene, calculus, or violence inflicted in birth.

815. There is another ſpecies of this vitiation, when the urine is expelled with a perſon's knowledge indeed, but againſt the will, nor can it be retained for occaſion, when it urges. It ariſes from the urine being more copious, exceedingly aqueous, or immoderately acrid, the bladder being more ſenſible on account of inflammation, herpes, ulcer, excoriation, or defect of mucus, contracted by ſpaſm, ſtiff, not dilatable becauſe of external impediments,

or compreſſed, relaxation (814.) of the ſphincter of the bladder; accompanied with ſtraining of the diaphragm and abdominal muſcles in vomiting, cough, laughter, birth, going to ſtool, teneſmus; nor is the reaſon obſcure, why it more frequently happens to the more delicate ſex, boys and aged people, that involuntary dribbling, which continues after making water, and excretes the remainder of the urine more ſlowly, ſo common to the aged, is likewiſe underſtood to be owing to the reſolution or weakneſs of the *muſculi acceleratores.*

816. Of the immoderate profuſion of urine, which is called diabetes, ſeveral ſpecies are related, ſome indeed more rare than others, and on that account not acknowledged by all equally certain. For either a lympid, aqueous urine above the proportion of drink is paſſed, or what is profuſely excreted is thick, turbid, whitiſh like chyle, and ſometimes in taſte, ſmell, and colour, reſembling honey. They alſo report, that ſometimes, in manner of a lientery (804.), the drink, by reaſon of thirſt, greedily and in great quantity ſwallowed, by a very quick paſſage through the body, as if through a ſiphon, is conveyed to the bladder and expelled in the ſame ſtate as when taken. Whence the diſtinction into true and ſpurious diabetes, and into various degrees. The origin likewiſe is much different. An aqueous tenuity of the humours (287. 354. 359.), an inflammatory, atrabilarian (282. 284. 355. 361. 367.) ſpiſſitude, hardly admitting a permanent mixture with the aqueous parts; a more lax coheſion of the craſſamentum with the aqueous portion than is proper (319.), various, attenuating, diſſolving, liquifying (288. to 317.) acrimonies, perhaps an aqueous inundation (372.) of the bile,

and deſtruction of the mixture, and hence of the ſaponaceous virtue; degeneracy of the fat, and nutritious gelly (376. 379), into an aqueous juice, great laxity of the renal veſſels; a greater impetus of the humours towards the kidneys by the abuſe of diuretics, venery, a ſuppreſſed cutaneous excretion, a more ſtrict external habit of body, obſtructions of other viſcera, or any attracting irritation whatſoever, principally tend to this effect. Does the moiſture attracted from the atmoſphere likewiſe ſupply matter, ſometimes, to an amazing quantity of urine?

Vitiations of the cutaneous Excretion.

817. Great profuſion of ſweat, which neither a more intenſe exercitation of the body, or emotion of mind, nor external heat, or what things are ingeſted or applied externally, create, acknowledges for its cauſes, laxity of the cutaneous pores, an accelerated circulation of the blood, an increaſed impetus towards the ſurface, a redundance of aqueous matter in the humours (287. 354. 359.), or its too eaſy ſeparation from the craſſamentum (318. 319.). Whence it appears, what diſeaſes it is wont to ſupervene, and with what different prognoſtics.

818. The nature likewiſe of particular ſweats, which flow from ſome certain parts of the body only, and alſo of the hot, cold, thin, viſcid, differently coloured, fœtid, &c. is eaſily diſcovered from (817. 657. 658. 659. 401.), and other places.

Symptoms of the Functions of the Sexes.

819. Nature, who affords her aſſiſtance for the preſervation of life and health in individuals, beneficent likewiſe towards the human race, with no leſs care uſes her endeavour for the propagation of the ſpecies. Whence there is formed a diverſity of ſex, and of parts which pertain to this, alſo of functions, by which every one, in their own way, concurs to the begetting of offspring. It may ſeem indeed, that that faculty is ſo ſeparated from the reſt, that it ſcarcely deſerves to be conſidered amongſt diſeaſes, when neither its vigour happens at every time of life, nor conſequently does its languor conſtantly diſturb the reſt of the œconomy. But there are given, however, vitiations in this ſyſtem alſo, not to be omitted, which, either in themſelves, on account of the dignity of the function which they impede, are reckoned important, or becauſe they are the conſequences of other diſeaſes, or induce miſchiefs upon other functions likewiſe.

Impeded Actions of the male Sex.

820. When the male is languid or incapable for an erection, that happens either by torpor of the faculty, by which the yard is made tenſe, or paucity, or a vapid inertneſs of the ſeed which ſerves for a ſtimulus. Either vitiation is peculiar to the genitals alone, or induced upon theſe by conſent from other places, and is produced from very many and very different cauſes, which are eaſily learned from (196. 198. 752. to 755.). But, ſeeing

both the imagination and perturbations of the mind ſo much here avail, and that every degree of ſtrength whatſoever is not ſufficient for this action (819.), it is no wonder that this ſymptom joins itſelf to very many diſeaſes.

821. The yard is alſo ſubject to the oppoſite affection of violent ſtretching, which, when it is without a deſire of venery, it is called priapiſmus; if with inſatiable ſalacity, ſatyriaſis; the latter is attended with pleaſure, the former with pain. The vitiation is to be reckoned among ſpaſms (743. 747.), as, in like manner with theſe, it is either idiopathic or ſympathetic, and is produced from the like cauſes (744.). The principal are, redundance, acritude, and virulency of the ſeminal liquor, inflammation of the genitals, exulceration, irritation from the neighbouring parts, eſpecially the *veſica urinaria* and *inteſtinum rectum*, being inflamed, diſtended, eroded, fretted by calculus, or ſtimulated by a transfluent acrimony, pain of the gout, lumbago, convulſive diſeaſes, laſcivious delirium.

822. Impotency to emit the ſeed is either owing to its deficiency, impediment of the paſſages, or imbecility of the motive power. It happens, therefore, from various organic vitiations of the teſticles, epididymis, ſpermatic veſſels, *vaſa deferentia*, *veſiculæ ſeminales*, the proſtate gland, urethra, penis, ſcrotum, groin; or theſe being intire, a more languid nerve (820.), or paralyſis of the *muſculi acceleratores*, cremaſter, ſphincter ani, and others, which perhaps contribute here, may be in fault. Whether or not is redundance of the ſeed, induced by a more indolent manner of life, ſometimes to be accuſed?—It ſeems it might.

823. They labour under incontinency of the ſemen, from whom, upon the firſt tenſion of the erecting member, or by nocturnal pollutions, it is emitted, or, without pleaſure, flows by conſtant dribbling, mild, acrid, or virulent in gonorrhœas. The ſemen abounding, turgeſcent, more tenuous, acrid; greater irritability of the genitals, and too great laxity of the ducts, the conſequences (562.) of immoderate venery, eſpecially of the juvenile, too much abſtinence (563.), the abuſe of things promoting venery and diuretics, and venereal virus are wont to induce that evil.

Symptoms of the Feminine Sex.

824. As the menſtrual evacuation of the blood from the uterus happens according to nature, at a certain time of life, ſo when it does not ſoon enough appear, or before pregnancy, or lactation, is ſuppreſſed, it is preternatural, and is in many ways hurtful (565.). It is the conſequence of paucity, craſſitude, an aqueous inertneſs, a cachectic, and ſcorbutic impurity of the blood from preceding evacuations, diſeaſes of a ſeverer ſort, faſting, and even plethora; debility, or too great rigidity of the ſolid compages, a more languid or intenſer circulation, or unluckily directed elſewhere; infarction of the abdominal veſſels and viſcera from cacochylia and cacochymy, torpor of the uterine veſſels, obſtruction, rigidity, coalition, conſtriction from ſpaſms, cold caught, the abuſe of abſtringents, compreſſion from external and internal things: Finally, multifarious impediments of effluxion from the mouth of the uterus, the meatus, or entrance of the vagina being conſtricted, ſhut, compreſſed, coaleſced, im-

perforated. A diminution or lingering of the menſes acknowledges cauſes not diſſimilar.

825. On the other hand, an immoderate profuſion by its own miſchiefs, very often hurtful to the junior, aged, married, and unmarried, is owing to various vitiations, as well of the blood as of the uterine canals; ſuch as redundance of blood, orgaſmus, tenuity, acritude, a more accelerated motion, chiefly directed towards the genitals, its leſs expedite return by the veins on account of ſpaſms, obſtructions and conſtrictions, debility of the veſſels, irritation, eroſion, and ruption, ariſing from the fotus of the water-pot, abuſe of venery, frequent impregnation, abortion, a laborious birth, contuſion, ulcer, and heterogeneous things contained in the uterus, external ſtimuli &c.: Whence what brings on the uterine hæmorrhagy may be underſtood.

826. The aberrant evacuation (401.) of the blood by other places, which is wont to ſucceed ſuppreſſed menſes, and to be vicarious to theſe, is produced from a perverted direction of the humours, and an incongruous manner of reſiſtance; and therefore, being collated with (203. II. 411. 824.), is eaſily explained.

827. Diſcoloration of the menſes, leucorrhea in women, either enſue upon an univerſal cacochymy, or topical affections of the genitals, a congeſtion of ſerum in theſe, a flaccid contexture, weak, inert veſſels, vitiations of the menſes, a rheumy, ſcorbutic, purulent, ſanious, virulent acrimony, brought from elſewhere, or generated here, the abuſe of venery, a reſtrained ſalacity, external and internal irritations, which heighten the afflux to theſe parts, or even impediments which obſtruct the reflux.

828. Things apt to induce a morbid ſterility, are, a morbid anguſtation, and organic vitiations of the pudenda, vulva, vagina, and uterus, on account of which the male cannot be admitted; compreſſion, obſtruction, concretion, dropſy, ulcer, ſcirrhus, marcour, exſiccation, induration, relaxation, inviſcation, a perverted conformation, defects, and the like, of the uterus, uterine tubes, ovaria, and ova; by which it happens, that the ſemen of the male cannot be rightly received, enter, or be retained as it ought, to paſs in, and ingraft its efficacy; or that which belongs to the woman cannot contribute. Whence alſo vitioſities of the menſtrua and fluors without blood (824. 827.), immoderate venery, a more frigid temperament, torpor, exceſſive irritability (190.), an aqueous cacochymy, glutinous, acid (283. 287. 307.), cachexy, obeſity (394.), paucity of the humours (393.), a more robuſt conſtitution of body in viragos, and many other things tend to this.

829. The pregnant woman ſuffers abortion from a multiplicity of cauſes, as there are very many circumſtances without which the fœtus cannot be carried to maturity. Of theſe the free intercourſe of the fœtus with the mother's womb, by means of the placenta, is deſervedly eſteemed amongſt the principal; as nature for the moſt part, that being taken away, ſooner or later ſends forth the fœtus in a ſtate not to poſſeſs life. Whatever vitiations, therefore, either of the mother or fœtus, ſeparate the placenta from the uterus before the time, may be reckoned among the cauſes of abortion. To this, indeed, plethora in the mother contributes; a more impetuous determination of the humours to the uterus, immoderate congeſtion, or

even a deficient repair, and detraction of the nutriment on account of hunger; evacuations, or a motion directed otherwiſe; cacochymy, great diſorders of the nervous kind from affections of the mind, leipothymia, ſpaſms, fevers, more ſevere diſeaſes, a vehement contuſion of the body, chiefly directed towards the uterus in dancing, running, exercitation, carrying; a fall, cough, vomiting, laughter, ſternutation, hiccup, vociferation, immoderate and wanton copulation, &c. violent ſtrainings of the body in the elevation, a weight, extenſion of the joints, the alvine and urinary execretions, teneſmus; compreſſion of the uterus from a conſtricted belly, or the neighbouring parts being badly affected, contuſion, wound, inflammation, eryſipelas, convulſion, laxity, a rigid anguſtation, a mucous humidity, heterogeneous things contained, and other diſeaſes. The fœtus may be in fault when it is too large, or when there are ſeveral, cauſing inconvenience from their number, ſwelling with dropſy, troubleſome by violent motion, badly ſituated, reſtleſs, or languiſhing with diſeaſe, dead, or its placenta affected with marcour, obſtruction, degeneracy into hydatides, &c. But for the more debilitated and irritable to ſuffer a difficult birth, and oftner abortion, is a familiar evil. Hence are underſtood the cauſes of an untimely birth, in which the fœtus, likely to live indeed, but before the uſual time, is excluded.

830. Pregnancy protracted beyond the courſe of nature, if it really obtains, ſeems to infer, that the fœtus is tender, weak or extenuated, or that the uterus is too torpid: But it ſeems perpetual by the fœtus being withered after death, hardened, or covered over with a plaiſter-like cruſt.

831. The innumerable vitiations which induce a laborious birth, δυστοκια, either pertain to the child-bearing woman, or the fœtus, or its ſecundines. Of the former the principal are, when the pregnant woman, too young or too old, with her firſt child, is more delicate, weaker of conſtitution, impatient of mind, broken in ſpirits, labouring under torpor, morbidly fat, plethoric, exhauſted of humours, affected with an organic vitiation, or ſome other diſeaſe, and makes no efforts for birth, but ſuch as are ſpurious, more languid, or too violent: alſo various affections of the uterus from debility, ſpaſmodic contraction, compreſſion induced from the neighbouring parts, ruption, an oblique ſituation, hyſterocele (238.), a ſtraiter orifice, indurated, callous, contracted, diſtorted, ſhut by tumours, compreſſed or too ſenſible: likewiſe ſtraitneſs of the vagina, obturation, concretion, excoriation, ſiccity, and the like, which impede the paſſage of excluſion: Finally, a ſtraiter pelvis, or of a bad conformation. The fœtus is the cauſe of this if it has been of a larger ſize, big bellied, large headed, broad at the ſhoulders, deformed, dead, in a perverted ſituation, or without the uterus. Sometimes the placenta adhering to an incongruous ſeat of the uterus, or turning in before the fœtus, a premature effuſion of the waters from ruptured ſecundines, the umbilicous propending or entangling the fœtus, &c. may prove an obſtacle. Nor is it unfrequent, that ſeveral of the circumſtances of every kind concur, and therefore the difficulty of being delivered is ſo much more increaſed.

832. To what cauſes immoderate floodings at child-bearing, diſcoloured, flowing more ſparingly, or ſuppreſſed, are owing, is known from what we have delivered concerning vitiated catamenia.

833. When the milk is deficient, or the breaſts do not admit ſuction, the woman is rendered incapable of giving ſuck. Paucity of wholeſome humours, from faſting, a vitiated concoction, an immoderate evacuation of any kind, the ſtrength exhauſted by a more ſevere, acute, or chronic diſeaſe, the gravid uterus attracting the alible juice to itſelf, inflammation, obſtruction, ſcirrhus, cancer, exulceration, marcour, rigidity, or defect of the mammæ, either from a withdrawing of matter, or a vitiation of the organs, hinder the ſecretion of the milk. Obſtruction, or coalition of the lactiferous ducts, from the milk being thickened into grume, likewiſe prevents ſuction; alſo want, or too great fatneſs of nipples, or on account of fiſſures, wounds, chops, inflammation, ſmall ulcers, too tender, and likewiſe a greater ſenſibility of the whole body.

Of the eſtabliſhing the differences of Diſeaſes.

834. AND thus much concerning ſingle ſymptoms; which if any one rightly comprehends, according to the multifarious concurrence and ſucceſſion which each or all, one with another, admit, and according to the diverſity of the parts upon which they can fall, and hath diligently conſidered the variety of forms, differing, and more or leſs compound, it muſt neceſſarily occur to him, that theſe expreſs ſo many different diſeaſes.

835. Every diſeaſe whatſoever has doubtleſs its own ſymptoms proper to itſelf, neceſſary (87. 112.), and always the ſame, which both declare it preſent, and that they flow from its nature, and conſequently are different in different diſeaſes, and diſtinguiſh it from all others. Neither truly muſt we

ſuppoſe, that what ſome men differ in from others in the ſound ſtate, can pervert the nature of diſeaſes, or that the irregularities which diſcover themſelves in morbid affections, can aboliſh the mutual relation of cauſes and effects.

836. Although, therefore, the nature of a diſeaſe perhaps lies hid, or, among the different opinions of phyſicians, is doubtful (416.); from the concurrence of ſymptoms, however, with which it is attended, we are not leſs certainly allowed to diſcriminate the ſame, and to refer it to its own title: for moſt diſeaſes have been denominated, not after their natures were known, but, after their names were impoſed, their natures have been inveſtigated.

837. But ſymptoms make up the moſt evident part of the morbid ſtate (88.). In preference to other things, therefore, which relate to this diſeaſe, thoſe are deſervedly reckoned the fitteſt, by which fixed and manifeſt characters of diſeaſes, however different, can be conſtituted (417.): providing, by diligent obſervation and judicious choice, thoſe which are neceſſary, whether perpetual or temporary (112. 117.), can be carefully collected, and accurately diſcriminated from the adventitious and non-neceſſary (114.), and in what manner, concourſe, order, and ſeat, they preſent themſelves maturely digeſted.

838. And ſeeing the different genera of diſeaſes do not ſo totally diſagree, but that ſome have a mutual affinity with others, it will be therefore proper, from thoſe things likewiſe which are common to many genera, by a parity of reaſon (837.), to compoſe the principal genera, by characters rightly limited, or claſſes ſtill fewer in number, to

which, by an uſeful compendium, all the genera whatever having affinity, may be reduced.

839. There will be alſo a place here for a further diſtribution into ſpecies; if at any time that which is wont to be different in any genus whatſoever (837.), either from the nature of the parts upon which it falls, or of the evident powers from whence it is produced, or even of the acceſſary ſymptoms or other conditions, can be marked ſeparately.

840. From which (834. to 839.) it is evident, that there is no reaſon why phyſicians ſhould deſpair of its being ſome time accompliſhed, that the vaſt number of human diſeaſes, an example being taken from the writers of natural hiſtory, may be reduced into a ſyſtem, which free from every hypotheſis and the inventions of ſectaries, reſting upon faithful obſervation alone, may exhibit the claſſes, genera, and ſpecies, each diſtinguiſhed by its full, certain, and manifeſt characteriſtic marks. Specimens already publiſhed by the moderns bring us into further hope, that ſucceſs will not be wanting to repeated attempts, and that a thing of ſo great moment, and therefore greatly deſired by every good man, will be thus at laſt happily effected, ſo as not to approve itſelf uſeful only in finding names for diſeaſes, but chiefly to pave an eaſy way for inveſtigating their cures.

Accidental Differences of Diſeaſes.

841. It is now time at laſt to ſpeak in this place concerning the differences of diſeaſes, which they call accidental (121. 418.). Theſe, indeed, may perhaps ſeem of ſmall moment, being ſuch as do not pertain to the natures of diſeaſes; But that they

are, however, of ſpecial uſe in practice, the treating of them will teach. Neither certainly ought they to be omitted in compiling a ſyſtem (840.). We ſhall therefore expound the principal under certain heads, theſe being omitted which recommend themſelves more by their ſubtilty than uſe.

Differences of Diſeaſes from their Origin.

842. DISEASES, according to the diverſity of their origin, are divided into hereditary, congenite, and acquired or adventitious.

843. It is called hereditary, which from parents affected with a ſimilar diſeaſe, or its ſeeds, by a fault of generation, is propagated to the offspring, the family taint ſometimes paſſing through ſeveral ſucceſſions, even to the lateſt poſterity. This is either paternal or maternal, of a manifold nature; ſometimes manifeſt immediately from birth; at other times breaking out afterwards, ſooner or later, often at a ſtated period of life. But thro' ſo much ignorance of the manner in which we are generated, we can ſcarcely venture to aſſert any thing poſitively concerning the manner of that tranſlation, much leſs to place its common and invariable ſeat, either in the firm parts only, or in the humours, or in the motive powers; when even the innocent likeneſs, which children have to their parents, is incomprehenſible.

844. When a diſeaſe is engendered in the fœtus in the womb, which, neither manifeſt nor latent *in ſemine*, before conception was inherent in either of the parents, and conſequently not to be traced to inheritance (843.), it is called congenite. Hence its difference from the hereditary is evident. Beſides

other things, maternal blemiſhes, organic vitiations, and monſters are referred to this, whoſe origin is aſcribed to the imagination of the mother (600.), to injuries induced upon the fœtus in utero (599.), and finally, to a primordial corruption of the genital matter (380.).

845. Thoſe to be ranked among adventitious diſeaſes, which happen to a perſon after birth from certain powers which the infant contracts from the nurſe whoſe breaſt it ſucks, have ſome affinity to the hereditary and connate, (843. 844.), and, being more deeply rooted, ſhow, that theſe kinds of affections can likewiſe be communicated by corruptions of the humours.

846. The diſtinction moſt notable is into primary diſeaſes, πρωτοπαθεια, and ſecondary, δευτεροπαθεια, which obtains, when a diſeaſe produced from its own cauſe, either continuing or terminating, produces from itſelf a diſeaſe of a different genus: The ſecondary, however, ought not to be confounded with ſymptom (95. 105. 109.); but although it may have a ſimilar nature, the ſucceſſions are not leſs manifold often than the ſymptom of the ſymptom (95. 96.). Whence of the ſame diſeaſe, according as it is produced either from the primary, or others different, various ſpecies ariſe, to diſtinguiſh which is exceedingly neceſſary, as well in the practice as in compoſing the hiſtory of diſeaſes (839.): To this likewiſe pertain, thoſe things which practitioners are wont to deſcribe, with regard to a diſeaſe produced (58.) from an external or internal cauſe, and which we have propounded above (617. to 622.), concerning the preternatural ſeeds.

847. Further, theſe are called pandemick, which ariſing from a common cauſe, ſeize a certain people. But there are likewiſe endemic, confined to a particular region, vernacular, more or leſs conſtant, or epidemic, επιχωριοι, which, when they flow from a natural indeed, but unuſual, cauſe, do not diſcover themſelves but at a certain time. It is evident therefore, that of thoſe genera there is at bottom vitiations manifeſt, occult, common, unuſual, native or foreign, of thoſe things which ſupply the common exigencies of life, chiefly the air, water, food, &c.; thus new and unheard of diſeaſes ſometimes make their appearance; at other times the nature and diſpoſition of thoſe that are known are changed. The generality, however, are not ſo indiſcriminately affected by theſe, as not to prevail ſometimes among perſons of a certain condition only. Diſeaſes oppoſite to theſe ſcattered up and down, which they call ſporadical, having ariſen not from ſome common cauſe, but from a vitiation and irregularity peculiar to every one, belong to divers genera.

848. The changes which happen at different ſeaſons of the year, of air, meat, drink, manner of life, are likewiſe ſo many powers fit for creating different diſeaſes. Hence the diviſion of theſe into *vernales*, *æſtivi*, *autumnales*, *hyemales*, which alſo vary much among themſelves, according to every viciſſitude that has been conſiſtent or inconſiſtent with the ſeaſon. The difference of epydemics (847.) chiefly remarkable, is that which is owing to the two ſolſtitial periods of the year; when any of theſe, from the date of their commencement, in winter or ſummer, having advanced ſo far, manifeſt their noxious effects, and create conſtitutions of diſeaſes,

ſeizing univerſally, and theſe conſtitutions often exceedingly different, even repugnant to each other, and chiefly prevailing at their own equinox. Whence they are rightly diſtinguiſhed into vernal and autumnal.

849. Nor is the difference of diſeaſes to be diſregarded, which is ſought from the diverſity of temperaments. It certainly very much conduces to the managing the healths of individuals. And although there is great diſſenſion among authors, about the ſeat and nature of temperatures, they do not deny, however, that they really exiſt, and that they have the efficacy of ſeeds (614. 615.); and that there are conſequently a particular ſet of affections, to which ſome, on account of that condition of body, have a greater tendency (78.).

850. Thither likewiſe are referred, diſeaſes of various ways of life, thoſe eſpecially which they denominate handicraft. This conſiderable claſs, not as yet diſtinguiſhed in a manner ſuitable to its importance, owes its origin partly to the matter amongſt which a perſon is every day employed, with which he is ſoiled, or the air he reſpires, or conſtantly circumfuſed, is infected; partly to the attitudes, motions, and exertions which he uſes at work. Theſe are the ſources from whence it is allowed to draw whatever pertains to this head. They may be ſeen (400. 441. 442. 486. 501. to 531.).

851. By diſeaſes of age are meant thoſe which ariſe from that which is peculiar to a certain period of life, and by which one differs from another. Theſe, therefore, the ſeries of mutations in the firm parts, humours, and motive powers, declare, which the duration of man, from his birth thence forward

to his death, undergoes from the appointment of nature (612.)

852. Diſeaſes of the ſemen and uterine fœtus, which obtain, indeed, before nativity, and ought to be claſſed among the hereditary (843.), or congenite (844.), are from thence likewiſe underſtood.

853. Seeing a new born child ſuddenly undergoes very conſiderable changes from birth, the body having been formerly conſtantly cheriſhed by a moiſt heat, being very ſoft, exceedingly irritable, the organs not yet having been accuſtomed to the atmoſphere, reſpiration, the changed circulation, and egeſtion, the pulmonary ſyſtem being beſet with mucus, and the primæ viæ with the meconium, the abdomen being leſs ſuſtained externally, and the umbilicus cut, it is liable to multifárious affections, from which a little further advanced it is almoſt entirely free.

854. Infancy is likewiſe attended with its own diſeaſes, by reaſon of the laxneſs and tenerity of the body, eſpecially the infirmneſs of the bones and articulations, weaker organs of firſt digeſtion, voracity, their ordinary kind of food, an indolent life, redundance of humours, and dentition. Whence alſo it is given to underſtand thoſe which infeſt childhood all along to puberty; for they are owing to crudities produced from a diverſified food, cacochylia, worms, cacochymy, ſuppreſſed excretions, calculus, great ſenſibility, an incited circulation, growth, and evolution of parts.

855. Youths are indiſpoſed from the greater quantity and impetus of the blood, and an increaſe indeed, but not ſufficient corroboration of the compages of the body; alſo from the vigour of the genital ſyſtem advancing to maturity.

856. A robuſt *vis vitæ*, ſtrength of the ſolids, a denſe blood, polychymy, and obeſity, produce diſeaſes in thoſe of a ſet age.

857. In a ſenile body the ſolids become dry, the ſmaller tubes grow rigid, the nerves turn marcid, the *vis vitæ* and faculty of motion and perception languiſhes, the circulation turns torpid, the native heat declines, the excretions become ſlow, and the humours being corrupted by a mucous, ſaline, terreous feculency, are vitiated. From theſe the origin of many evils, which attend age, is perceived.

858. But it is not without its uſe to have remarked, that diſeaſes, which are produced from a congeſtion of humours, and eſpecially the efforts of nature, by which ſhe expells whatever ſuperfluous or noxious has ſprung up in the humours, or which, being ejected from the circulatory ſyſtem, ſhe depoſits in a certain part, very frequently happen according to the diverſity of ages in different regions of the body; as it may be obſerved, that the ſuperior parts are always attacked in the junior; in adults thoſe which are ſeated in the thorax and immediately under it; in the aged the loweſt ſituated viſcera of the abdomen and the joints. This however is not either ſo conſtant, or always ſo ſalutary a law, that it ſhould ſeem rather to be attributed to the prudent determination of the ſoul, than to conditions merely corporeal.

859. When ſex likewiſe relates to ſeeds (613.), according to the difference of this, diſeaſes are divided into maſculine or feminine; and the latter further divided into diſeaſes of virgins, pregnant and puerperal women, of thoſe in labour, giving ſuck, and turned old, according to the variety of conditions to which nature has ſubjected the more

delicate ſex. The things above conſidered (820. to 823.), throw light upon theſe.

860. Finally alſo, we may refer to theſe diſeaſes congruous and incongruous; ſpurious and legitimate; and alſo thoſe which are called material, or immaterial.

Differences of Diſeaſes from their Seat.

861. A diſeaſe, the ſame in its nature, according as it ſeizes different parts, may differ in the ſymptoms, duration, and event; hence alſo in the diagnoſis, prognoſis, and method of cure. For which reaſon it concerns the phyſician carefully to diſtinguiſh the ſeats of diſeaſes; nor is the difference without its own uſe, which is obtained from this circumſtance.

862. Of this claſs are external and internal diſeaſes; fixed, which are confined to one ſeat; wandering, which remove from one part to another; retrograde, which, when they had for ſome time occupied the outward parts, having left theſe, recede inwardly.

863. The idiopathic, however, and ſympathetic come to be conſidered before all others. Of the former ſort are thoſe whoſe cauſe reſides in the ſame part in which the ſymptoms manifeſt themſelves. Of the latter, when the ſeat of the cauſe and ſymptoms are different, and when the part or function does not ſuffer from a proper, but a foreign vitiation, by conſent. Sympathetic affections therefore, in the manner of ſymptoms (86.), do not continue beyond the vitiation from whence they proceed, and on that account they differ from ſecondary diſeaſes (846.),

the

the nature of which they at laſt attain when ſympathy paſſes into idiopathy.

864. This conſent, indeed, between the ſyſtems of the human œconomy, functions, and all the parts is univerſal: but that a nearer and more particular conſent, however, of ſome with others exiſts beſides, appears from the authentic teſtimony of obſervations; although we do not clearly enough perceive the nature of it, or of its laws. It is probable, that it depends not upon one condition only, but upon ſeveral, and that the principal of theſe is ſeated in the nervous ſyſtem; next in the ſyſtem of circulation; further in the continuity of the membranes; alſo in the communication of the veſſels; and perhaps in a ſimilitude of conſtruction of the parts, or of the humours, which they ſecrete or contain: Beſides, the vicinity of parts may contribute to this, and a more depending collocation, or one directly oppoſite, or ſome affinity of action. According, therefore, as more or fewer of theſe concur together, there ſeem to ariſe various degrees of ſympathy. Nor muſt the vital power (170.) be omitted, which, as it is both very widely diffuſed over the whole body, (but does not, however, exiſt equally ſtrong in individual parts, or in all perſons (175. 176.) indifferently,) and is poſſeſſed of a moſt ample conſent (178. 179.), muſt needs be of great efficacy here. Hence it becomes evident, why there occurs ſuch a multifarious difference of peculiar conſents of that kind among men, and why ſome more than others, not all in the ſame way, are ſympathetically affected.

865. Diſeaſes which ſeize the whole body are called univerſal; partial, which ſeize a ſingle part only. Of the former, however, a twofold genus may be diſtinguiſhed, namely proper, when the

cauſe or matter is every where diffuſed; but improper, when it is confined to a particular ſeat, yet by its diſturbances harraſſes the whole œconomy. What in this tribe is therefore called univerſal, ought ſometimes to be referred to ſympathetic affections (863.), ſometimes to ſecondary diſeaſes (846.). It ſometimes happens alſo, that an univerſal diſeaſe paſſes into a particular, or the latter into the former, with various prognoſtics.

Differences of Diſeaſes from their Courſe.

866. Every diſeaſe whatſoever produced from its own cauſe acquires from this likewiſe determinate powers, by which it both acts, and continuing in action terminates its courſe. This therefore, according to the different nature of diſeaſes, and even the diſeaſe itſelf, muſt neceſſarily differ; nor does the ſame happen to particular ones either in duration, celerity, or tenour. From which, differences very remarkable are obtained.

867. Thoſe which terminate ſpeedily, and conſequently are of ſhort duration, are called ſhort, if they have been mild at the ſame time; but if vehement and dangerous, acute. The latter are further diſtinguiſhed according to the degree of celerity into very acute, which do not run above four days; peracute, which are terminated in ſeven days; acute, which are finiſhed in the third week: finally ſubacute, or acute deciduous, which extend themſelves ſo far as forty days. To theſe perhaps it may be allowed to add likewiſe acute relapſing, which wholly end upon the ſixtieth day or later. Thoſe which are protracted beyond this date, altho' perhaps they have ariſen from the acute, are denominated long,

or chronic. And there are many circumſtances indeed to which that velocity of the acute, full of danger, is owing; the nature of the evil, the ſeat affected, the importance of the function annoyed, ſympathy, diſtemperature of the body, *&c.* but eſpecially febrile commotions in the circulation of the humours. Whence diſeaſes which are attended with a continued fever, are before others properly referred to this.

868. Again, ſome diſeaſes advance by a continual tenour from the firſt invaſion to the end, conſequently from theſe are underſtood continued: the milder nature of others, the force being divided, invades indeed by reiterated attacks, but interrupted by intermediate ceſſations, ſo that diſeaſe and health are alternate as it were; theſe are intermittent. Of an ambiguous nature between the latter and the former are thoſe called continued remitting, or exacerbating, which affect conſtantly indeed, but at intervals more remiſsly.

869. But of either ſort, the intervals of recurrences, by a manifold variety, are longer or ſhorter in different perſons: From which again there are new differences. Their circuits, likewiſe, as they are regular, divided into equal ſtages, or analogous among themſelves, or irregular by an uncertain order, are called periodic diſeaſes, regular, or anomalous; *typici*, or *erratici*, *vagi*.

870. Amongſt the periodic (869.) fevers, indeed, and various affections of the nervous kind, theſe are more conſpicuous than the reſt. Seeing, therefore, the nature of periods (70.) always ſuppoſes a cauſe not ſimple but compounded (69.) of ſeveral conditions, ſome of which perſevere, others are temporary, and may be preſent or abſent; it ſeems very credi-

ble, that a permanent diatheſis is here given, which may be regarded as a ſeed (75.), and that its ſeat is in the nervous ſyſtem ; at leaſt, that a ſpecies of too great ſenſibility or mobility may be ſuppoſed, which of itſelf, however, either acts not at all, or more mildly ; hence, that noxious powers are alſo given (76.), which in ſome way or other excite this, nor are they actually perpetual, but mitigated or removed by a ſingle paroxyſm, about to return at unawares. Notwithſtanding, it will be difficult to determine, not only the nature of a ſeed, as it varies in different diſeaſes of that ſort, but alſo to expound all and ſingular the noxious powers, and by what manner all of them ariſe and concur. It may be allowed to doubt, whether a ſeed can excite itſelf by its own efficacy, without the acceſſion of a new noxious power, at leaſt without any manifeſt one ; eſpecially, if, from ſome occaſional cauſe, it has once begun motion, which may be thenceforth iterated. But the complication of ſeveral periods of a different kind, and the tranſmutation of one kind into another, which is ſo frequently obſerved, renders that ſubject likewiſe particularly more involved. Neither are any of the hypotheſes which have as yet been invented, at all ſatisfactory.

Differences of Diſeaſes from their Gradation.

871. THE duration of diſeaſes may be compared to the life of plants and animals, in like manner as theſe have its own different ages, which it may be allowed to call gradations. For a diſeaſe begins, increaſes, perſiſts, declines, and at length terminates ; nor does it proceed in an equable tenour, but in a various degree of ſtrength through theſe ſtages.

Whence the diviſion of the morbid courſe into beginning, increaſe, height, declenſion, and termination, which do not, therefore, diſtinguiſh different diſeaſes from one another, but different parts of the ſame diſeaſe.

872. The beginning, according to the diverſity of the diſeaſe, is longer or ſhorter; and therefore not to be reſtricted to the point of time only in which a perſon begins to grow ſick; hence it is eſtimated from the firſt invaſion to the remarkable increment of the ſymptoms. The increaſe happens, when a diſeaſe, the number and magnitude of the ſymptoms increaſing, manifeſtly aggravates and multiplies the diſorders of the œconomy. The height ακμη, is the time when the diſeaſe is moſt vehement, in which having acquired its greateſt force, it increaſes no further; but, at the ſame time, is not diminiſhed. In the declenſion, the force of the diſeaſe being ſpent, and its ſtrength declining, the ſymptoms become mild, and the end approaches.

873. In moſt other diſeaſes, theſe ſtages occur in a manner conſiſtent with the nature of every one; eſpecially, however, in thoſe which are terminated by a ſalutary ſolution. There is alſo a certain proportion remarked between the different gradations, very proper for making an infallible prognoſtic; on the other hand, a fatal termination of diſeaſes, a criſis, metaſtaſis, the mutation of one genus into another, complication of various ones, and a proper or prepoſterous treatment, not unfrequently interrupt, alienate, and obſcure that order. The acute and ſhort (867.), more than the chronic; the febrile more than others, moſt manifeſtly diſcriminate their own ſtages. But the periodic (869.) have two genera; the univerſal, which pertain to the courſe of

the diſeaſe; the particular, which belong to ſingle paroxyſms.

Differences of Diſeaſes from their Diſpoſition.

874. THE diſpoſition of a diſeaſe principally manifeſts itſelf by the train of ſymptoms with which it is attended. Hence that diſeaſe is called great, which diſorders the œconomy with many and great ſymptoms, whether it is accompanied with danger or not; on the other hand, ſmall and gentle, which induces little moleſtation.

875. A benign diſeaſe, although perhaps great (874.), manageable, however, by a proper treatment, neither alarms with deadly, nor unuſual ſymptoms.

876. The malignity which manifeſts itſelf in diſeaſes, although it often affords a refuge to ignorance, and a veil to the errors of phyſicians, yet, as it in fact exiſts ought by all means to be attended to. That, in a proper ſenſe, denotes a diſeaſe, which, having attacked deceitfully mild, under phænomena not ominous, unexpectedly oppreſſes the powers of nature with very violent ſymptoms. Sometimes too it ſignifies ſuch as, contrary to its uſual cuſtom, excites uncommon ſymptoms, and diſorders more vehement than ſeem conſiſtent with its nature. Finally, the refractory, which likewiſe reſiſt the efficacy of experienced remedies, and are more exaſperated by treatment, are wont to be referred to theſe.

877. But that malignity (876.) happens indeed more eſpecially in the acute, and owes its riſe to virulent powers (485.), miaſmata (496.), contagions (498.), epidemic inſalubrities (847.), manifold vitiations

tiations of the humours, irritability (190.), torpor (196.), the conflux of ſeveral diſeaſes, an improper management of the ſick, or an incongruous treatment. Whence it is evident, that the malignant are indeed rightly divided into virulent, peſtilential, and contagious, but not by an abſolute diviſion; for not only the noxious powers muſt be regarded, but the acceſſory ſeeds likewiſe.

878. When a diſeaſe, accompanied with its uſual phænomena, its aſpect agreeing with its nature, runs through its ſtages, it is called regular, exquiſite; on the contrary anomalous, when it ſhews itſelf with unuſual ſymptoms, and its type and progreſs alien. But an anomaly, for the moſt part, harbours ſomething refractory, and acknowledges cauſes in common with malignity (876.); nor is it generally free from this. The nature of diſeaſes, which are denominated genuine, or corrupted, is the ſame.

879. In this place comes to be mentioned the diviſion of diſeaſes into paſſive and active, which have not inadvertently been added by the moderns. The latter are thoſe, a part of which, and not unfrequently the principal part, the active ſymptoms (101.) conſtitute. In the former, theſe motions of nature are abſent, becauſe of the vital principle languiſhing, or being oppreſſed by the noxious powers. (Conf. 98. to 105. 630. 633. to 649.).

Differences of Diſeaſes from their Event.

880. It much concerns the phyſician to fore-know, whether a diſeaſe can be cured or not; whether in whole, or in part only; whether by the force of nature, or by the aſſiſtance of art. Hence the ge-

neral diviſion of diſeaſes into curable and incurable, and the various degrees of each claſs. There are ſome, which exceed the power of both nature and art, abſolutely incurable; there are others, which are the ſubjects of art only, not of nature; or of the latter, and not of the former. There are ſome which admit a cure indeed, not intire however, but ſome part being left, or another diſeaſe ſubſtituted in its room. But ſeeing the meaſure of the powers of nature varies in different perſons, and we are not as yet arrived at the utmoſt boundaries of art, it is evident, that much ambiguity ſtill remains, and that all and ſingular the diſeaſes which pertain to every one of the claſſes whatſoever, cannot be completely enumerated.

881. That diſeaſe is denominated relapſing, which attacks anew, after it has for ſome time continued in appearance cured; by no means to be confounded with the periodic (869.). It ſuppoſes, however, an imperfect cure, and conſequently a part of its cauſe left (69. 70.), which, being in ſome way or other augmented or revived, is brought back (870.). Hence the matter of the diſeaſe, not thoroughly conquered or expelled, debility, irritability, torpor remaining from the former diſeaſe, together with a neglected evaſion of the noxious powers, are wont to bring on relapſes.

882. Salutary diſeaſes are diſtinguiſhed from the reſt by their favourable diſpoſition. For, although they induce moleſtations, they are ſo far, however, from annoying life and health, that they may likewiſe benefit both, and free them from more conſiderable evils, and leave the body more ſound than before they invaded it. Thither muſt be referred the greater part of active diſeaſes (879.), in which

nature draws out and engages her own medicative powers (633. *et ſeq.*) for the health of her œconomy. For by theſe motions are excited, inordinate indeed, but having this tendency, that whatever things are in the body any-how noxious, are corrected, aſſimilated, expelled, or, at leaſt, averted from the more noble parts. But as the greater frequency of this claſs of diſeaſes very much advantages the health of the human race, ſo it affords no ſmall advantage to phyſicians.

883. Directly oppoſite to theſe (882.), are thoſe which, pernicious to life by a varied degree of noxiouſneſs, one while, ſooner or later, infallibly however, kill without any hope of cure, thus called abſolutely fatal: another while they are fatal indeed in their own nature, but by a timeous and proper treatment, are capable of being ſubdued. Others are doubtful, which are ſometimes, not without danger, terminated in health, ſometimes in death; the fatality of others is accidental, more confined to the external or internal conditions of particular perſons; finally, there are diſeaſes which, although they do not deprive of life, draw after them, however, miſchiefs injurious to health, often irremediable. It is evident then that the uſe of this diſtinction is great, as well in prognoſtics, as in ſcholaſtic medicine.

884. Thereupon diſeaſes alſo generically differ among themſelves, by the nature of the event, in a fourfold manner; for they either tend to health, or kill; they paſs into other diſeaſes, or remain immutable, and continue till death is otherwiſe induced. But, what is very worthy of attention, the manner and form of every one of theſe terminations is manifold.

885. The ſeat and nature of thoſe perſevering is ſuch, that they do not diſorder the functions which conduce to life. But they are either incurable (880.), or which it is unſafe to cure; becauſe being ſalutary (882.), or familiar by long cuſtom, or more irritated by treatment, they are exaſperated.

886. There are a great number and diverſity of diſeaſes paſſing into other diſeaſes; here there obtains a twofold genus, one of acceſſion, the other of ſucceſſion, according as the former diſeaſe either continues or terminates, when another diſeaſe is produced. Different ſpecies of both may be underſtood from (621. 628. 846. 863. 864.). It is alſo evident, that different terminations (884.) have a place no leſs in theſe, than in primary diſeaſes.

887. Diſeaſes, which heal by the powers of nature, or by the aſſiſtance of art, are benignly reſolved, either by the vitiation, which is latent, being corrected, the matter aſſimilated, the circulation reſtored, and the functions repaired, or terminate by a ſalutary excretion of the peccant matter; or having changed their form, they paſs into another diſeaſe (886.), milder, which afterwards tends to health in its own way.

888. Nor are the kinds of death leſs various, which fatal diſeaſes induce. Old age, a natural diſeaſe, through rigidity and dryneſs of the ſolids, a feculent inſipidity of the humours, and a declenſion of the *vis vitæ*, neceſſarily induces a natural death. True diſeaſes, ſometimes by a foul corruption of the humours, tabefaction of the noble viſcera, a proſtrated vigour of the nerves, an impeded reſpiration, oppreſſed or exhauſted ſtrength, or ſtifled circulation, ſooner or later kill; at other

times, by an immoderate or incongruous evacuation, and conſequently by paucity of the vital fluid, or even a relapſe into a worſe diſeaſe (889.), they aboliſh life.

889. But of all others, the ſudden terminations and full perturbation of acute diſeaſes (867.) deſerve to be remarked, which were called by the ancients criſes, deciſions, ſeeing they decreed health or death to the patient, by ſome excretion or tranſlation of the peccant matter, ſuddenly manifeſting itſelf after the preceding diſturbances, which is immediately followed by a remarkable change of the diſeaſe into better or worſe. From thence excretory criſes, κατ᾽ εκκρισιν, tranſlatory κατα μεταστασιν, good, bad, perfect, imperfect, ſimple, compound, reiterated, critical perturbation, critical matter, &c. are predicted. The various influence of the days likewiſe in which theſe more or leſs, with different ſucceſs, happen, is diſtinguiſhed: whence ſome are called critical primary, ſome indices, ſome ſubincident, others vacuous.

890. Which (889.), if any one conſiders to be proper to active diſeaſes (879.) only, it ought to appear to him that there is here given ſome ſimilitude of a mutual conflict between nature and the morbific matter (51. 99.), and to a criſis is decided, which of thoſe fighting is to conquer or to yeild. If you add beſides, that thoſe do not happen unleſs in fevers, or in diſeaſes attended with fever (867.), you may doubtleſs believe that there is ſome inteſtine commotion of the humours lurking either in the whole body, or in a particular part, excited by an augmented vital motion and heat, which, the mixtion being diſturbed for a time, ei-

ther terminates in a ſalutary depuration or pernicious corruption.

891. In whatſoever way, however, you ſuppoſe thoſe to happen, touching the thing itſelf, it ſo evidently appears by the moſt authentic obſervations, both of ancients and moderns, that there is no place left for doubt: although it cannot be denied that examples of criſis are now-a-days rarer amongſt us, which ought to be imputed not only to a colder climate, intemperance in living, but ſtill more to the anticipating and interrupting manner of curing; and the too much neglect of the ſtudy of obſervation by the greater part of phyſicians.

892. But whether is any ſecure faith to be put in critical days (889.)? Are they owing to the determinations of nature? Or rather to the inventions of Pythagorean ſuperſtition? Let none pretend to judge, unleſs they have ſeen that the ſeries of critical days, delivered by the ancients, does not in every inſtance agree to the hepdomadal period;—and have learnt moreover from the periods (867. to 870.) and ſtages (871. to 873.) of diſeaſes, that are erroneouſly taken for the confuſed and irregular effects of nature not properly protecting herſelf, and deprived of her influence; and from the phænomena of wounds, inflammations, ſuppurations, and exanthemata, compared with thoſe, which fermentation, putrefaction, maturation of fruits, incubation, growth of animals, periods of the catamenia, &c. exhibit, that the changes and commotions of juices are every-where bounded by their own limits and gradations;—and who have, finally, acknowledged, that general rules are not taken away by exceptions, conſequently that the ordinary laws of

nature in the ſound and diſeaſed, are not weakened by certain fortuitous aberrations.

893. While, therefore, the diſpute is undetermined, the importance of the thing calls on all real maſters of the art, to avoid the ſubtilties of reaſoning, and, by diligent obſervation and force of examples, to combine their united efforts in aſcertaining a proper and final deciſion.

I am deceived if authority ſhall not remain to *Hippocrates*, credit to *Galen*, and to *Nature* efficacy and order.

THE END.

ERRATA.

Page 58. line 25. *coma after* continuance, *then read*, but they become incurable; although the diſtending force is removed.

P. 60. *laſt line, for*, nor are thoſe there wanting, &c. *read*, nor are they wanting.

P. 98. § 319. line 6. *for* cannot be confined, *read*, not to be confined. Line 9. *read*, ptyaliſm, or accumulated.

P. 103. § 333. line 8. *read*, and which is manifeſt without the aid of experiments.

P. 105. § 340. line 4. *for* boiled in the fire, *read*, boiled on the fire.

P. 114. § 371. line 1. *read*, aqueous-ſaline fluids.

P. 126. § 401. line 21. *read*, by any excretory.

P. 209. line 1. *dele* ſteric.

The folios from 200. to 209. were omitted by miſtake; ſo that page 209. follows, and connects with page 200.

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